

EXPLORING SPIRITUALITY AND MECHANISMS AFFECTING MENTAL  
HEALTH OUTCOMES: AN EXAMINATION OF YOUTH IN FOSTER CARE

BY

Paul Kalani Makanui

Submitted to the graduate degree program in Clinical Child Psychology and the Graduate  
Faculty of the University of Kansas in partial fulfillment of the requirements for the  
degree of Doctor of Philosophy

---

Chairperson: Yo Jackson, Ph. D., ABPP

---

Michael C. Roberts, Ph. D., ABPP

---

Toni K. Johnson, Ph. D.

---

Wei Wu, Ph. D.

---

Paula J. Fite, Ph. D.

Date Defended: June 18, 2012

The Dissertation Committee for Paul Kalani Makanui  
certifies that this is the approved version of the following dissertation:

EXPLORING SPIRITUALITY AND MECHANISMS AFFECTING MENTAL  
HEALTH OUTCOMES: AN EXAMINATION OF YOUTH IN FOSTER CARE

---

Chairperson: Yo Jackson, Ph. D., ABPP

---

Michael C. Roberts, Ph. D., ABPP

---

Toni K. Johnson, Ph. D.

---

Wei Wu, Ph. D.

---

Paula J. Fite, Ph. D.

Date Approved: June 18, 2012

### Abstract

The effects of spirituality and youth relationships with others on internalizing, externalizing, and adaptive outcomes were examined in a sample of 159 youth between the ages of 8 and 21 in foster or residential care. A data-driven approach was utilized to determine if, commensurate with extant theory, spiritual beliefs in youth are best represented by *proximal* (internal) and *distal* (external) domains. Results indicated the existence of two distinct factors, specifically *spirituality* and *relationships with others*, within the present sample. Indirect effects of direct coping and perceived social support on the relations between these factors and youth outcomes were also examined. Preliminary analyses indicated a significant relation between youth spirituality and adaptive outcomes, with a significant indirect effect of perceived social support on these relations. However, these relations were nonsignificant when accounting for youth relationships with others. Final results indicated that youth relationships with others significantly affected youth adaptive functioning through both coping and perceived social support. Youth relationships also significantly affected youth internalizing symptoms, albeit only through youths' perceived levels of social support. Youths' coping also emerged as an indirect link between relationships with others and adult-reported adaptive skills, although coping did not significantly affect the direct relation between the two. All other relations emerged as nonsignificant within the final models. These findings suggest that, while spiritual beliefs are potentially an important factor in affecting outcomes for foster youth, the strongest effects likely occur through youths' relationships with others, social support, and coping in relation to adaptive outcomes for these youth.

### **Acknowledgements**

The author would like to acknowledge and express deep gratitude, first and foremost, for the many forms and expressions of spiritual beliefs that give meaning and purpose to the lives of individuals throughout the world. The author also wishes to express love and thanks to the Mekanui family (Victoria, Leighton, Bug, Boo Boo, Chris Mendoza, Cameron, and Olivia) for their unwavering love, support, and inspiration. The author is further indebted to the numerous foster youth and caregivers who gave their time and efforts to the current study. The author would also like to thank Yo Jackson, Ph. D., ABPP, and Gaithri Fernando, Ph. D., for mentorship and professional guidance at all levels of personal and career development. The author wishes to acknowledge the SPARK Project for their diligent efforts in working with foster youth. The author also acknowledges the instruction, supervision, and support of the University of Kansas Clinical Child Psychology Program faculty and associated staff, including both thesis and dissertation committee members on the current project. Finally, the author would like to express deep indebtedness to the following individuals, in no particular order, for immense personal support, love, and/or friendship: Josh Carroll, Jake Morton, Adabel Lee, Harley Gray, Brian Noland, Angela Tunno, Elizabeth Gosset-Swan, Silvina Salvi, Beatriz Ornelas, Aaron Boulton, Brandy Suzanne Taylor, Eric and Anne Benson, Michael “Honcho” Gomez, Christina Diep, Leo Budy, Julie Nguyen, Edwin Morris, Sangeeta Parikshak, Eriko Akaike-Toste, Henry Drew, Farmer Greif, Hillary Deskins, Virginia Tran, Natalie Nguyen, Sarah Searcy, Michelle Kanga, Brutus, Luka Ray, Lola, Lucia, and Roxie. This research was funded through a larger study under NIH grant 5R01MH079252-04.

## Table of Contents

I.	Abstract.....	iii
II.	Introduction.....	1
III.	Method.....	19
IV.	Results.....	38
V.	Discussion.....	59
VI.	References.....	76
VII.	Appendix A: Preliminary Analyses.....	90

## Spirituality and its Relation to Maltreatment and Mental Health Outcomes: An Examination of Youth in Foster Care

According to the most recent Adoption and Foster Care Reporting System (AFCARS) data, over 460,000 children in the United States were in foster care near the end of the 2008 fiscal year (AFCARS, 2009). During the same year, approximately 273,000 children entered the foster care system for the first time. Although placement in foster care is almost always a response to allegations of child abuse and a legal step by a state to ensure the safety and well-being of children, the experience of being a foster child, coupled with a history of maltreatment, is related to a host of negative psychological outcomes. Across 32 peer-reviewed articles, Oswald, Heil, and Goldbeck (2010) found that children in foster care experience higher rates of internalizing symptoms (e.g., depression, anxiety, and Posttraumatic Stress Disorder), externalizing symptoms (e.g., attention and conduct problems), and developmental difficulties (e.g., attachment difficulties and social problems) compared to children from various community samples. This relation, however, is not linear; Fernandez (2009) reported a number of positive outcomes in a study of foster children followed longitudinally over a period of eight years, providing evidence that youth in foster care can potentially display positive behavioral and interpersonal functioning in spite of their experiences in care. Systematic investigation of factors accounting for the multifinality of outcomes for youth in foster care is sorely needed. The current study addressed this need by examining one of these factors, spirituality, and its role in predicting adjustment in foster youth.

## **Foster Care and Psychological Adjustment**

In terms of societal cost, the effects of growing up in foster care are far from benign; Pilowsky and Wu (2006) found that, in a sample of over 19, 000 adolescents, children who had been in foster care were more likely to use alcohol, five times more likely to be drug-dependent, were two times more likely to have significant conduct problems, and carried a significantly higher risk for suicide attempt compared to typical children. Courtney and colleagues (2001) followed approximately 140 foster youth through their transition to independent living over three years after leaving the foster care system. At 18 months, at least 18% of the adults in their study had been arrested at least once, with crimes ranging from selling illegal substances and theft to breaking and entering and assault. According to the U.S. Department of Justice (Office of Juvenile Justice and Delinquency Prevention), estimates of such criminal activity in age-matched individuals in the general population are less than .01% (OJJDP, 2009). These statistics point to a much higher prevalence of criminal activity and legal problems in foster youth when compared to youth in the typical population.

Children in foster care additionally experience systemic disruptions that likely contribute to poor long-term outcomes. They are often at an educational disadvantage due to missed school days during foster home transitions and incompleteness of academic records when changing schools. For example, Kelly (2002) surveyed records of youth in care in California and found that, on average, youth changed schools 9 times before the age of 18. Zetlin and Weinberg (2004) conducted a review of factors affecting educational performance of youth in care; they cited an unpublished study of group

homes for youth in care, which found that more than 40% of children surveyed had missed 10 or more days of school with each placement. In their study, 10% of children were absent from school for the entirety of the 70-day study duration. Zetlin, Weinberg, and Luderer (2004) conducted a survey of educational services provided to children in Los Angeles; less than a quarter of academic files for youth in care were available, and the existing files contained highly inconsistent, inaccurate, or incomplete information. Overall, they found that youth in care are twice as likely to drop out of school compared to children in the typical population. These findings provide support for the notion that children in care experience numerous transitions, that systemic difficulties exist in the transfer of information for youth in care, and that these transitions can have deleterious effects on youths' long-term functioning.

While placement in foster care for youth is intended to provide a stable and nurturing home environment with caring adults, placement also means removal from the home of origin, separation from known family members, adapting to a foreign environment with new caregivers, and possibly separation from siblings. For some children, foster care also means having to adjust to a new school, learn new caregiver cultures and values, and reorganization of the child's support network (Fernandez, 2008). Because the prevalence estimates of various negative mental health disorders in foster youth are significantly higher compared to typical youth, and because of systemic disruptions and an increased risk for legal and emotional problems as adults, the scientific study of children in care has become a recent priority for researchers, policymakers, and care providers alike (Tarren-Sweeney, 2008). Moreover, given the disruption in environment that comes with being in foster care, the need for understanding factors that



likely provide stability and promote positive adjustment for children in care requires attention. The current study examined spirituality as one of these factors providing protective benefits to youth in care.

### **Evidence for Resilience in Foster Youth**

Perhaps as important as the study of negative outcomes is inquiry into how children ‘overcome the odds’ and display positive adjustment despite their maltreatment and foster care experiences. For example, Collishaw and colleagues (2007) found that, among a sample of 378 adults with a history of child maltreatment, a substantial minority went on display adaptive functioning and little pathology across a variety of behavioral and emotional domains as adults. A study conducted by Daining and DePanfilis (2007), which examined 189 foster youth over 18 years of age who had left care, provided further evidence for positive adjustment in foster youth in spite of their stressful life experiences. Results from this study indicated that a majority of youth reported never being incarcerated or detained, over half reported never having used any drug in their lifetime, nearly 75% reported never having experienced a period of homelessness since leaving care, and over 80% reported having completed high school or enrollment in a degree equivalency (GED) program. As a whole, the sample reported moderately high ratings of positive adjustment assessed across numerous domains, including educational participation, employment, and avoidance of drug use and criminal activity (Daining & DePanfilis, 2007).

It is hard to reconcile reports of negative outcomes for youth in care with the reports of positive outcomes, mostly because research rarely examines the mechanisms by which adjustment occurs. One exception to this, Legault and colleagues (2006),

examined youth in foster care over a period of three years, and found support for the notion that various dimensions (both individual and relational) contributed to favorable outcomes in youth. For example, high self-esteem (an individual factor) and a greater number of close friendships (a relational factor) predicted low levels of anxiety in foster youth. High use of direct (non-avoidant) coping strategies (an individual factor) and a greater number of close friends (a relational factor) predicted low levels of physical aggression in foster youth. Researchers have provided further evidence that additional individual factors, such as appraisals of events and coping, contribute to favorable outcomes in youth exposed to maltreatment (Mahoney, Pendleton, & Ihrke, 2006).

Because the transition to foster care implies that many of the familiar people, places, and routines associated with positive development are interrupted, children's environments are likely to be inconsistent. These inconsistencies can make it challenging for children to form secure attachments and to progress developmentally (Granqvist & Dickie, 2006). Although understanding the role of relational factors is important for children in foster care, relationships with others are often in flux. Therefore, the investigation of individual factors like spirituality, which can affect beliefs and understanding of how the world works, may present particularly fertile ground for learning how foster youth will respond to new routines, home environments, families, and schools (Roehlkepartain, King, Wagener, & Benson, 2006). Furthermore, factors like spirituality can be particularly helpful for foster youth in managing transitions, given that beliefs and faith can potentially provide foster youth with a sense of stability and consistency across the changes and transitions they may experience. Crawford, Wright, and Masten (2006) suggested that, for youth who fail to form secure attachments due to

abuse, parental loss, or living within dangerous or chaotic environments, “a relationship with a higher power seems to offer security in the form of a substitute attachment figure” (pp. 358). Thus, spirituality has become a promising area of research for examining potential influence on outcomes in foster youth, and has been suggested as a potential mechanism by which positive adjustment occurs (Kim, 2008).

### **Relation of Spirituality to Outcomes in Children**

Cotton et al. (2006) conducted a review of the literature examining spirituality and the mental and behavioral health sequelae of adolescents. Their review found support for the important role of spirituality in influencing health outcomes in adolescents; those who endorsed more strongly held spiritual views engaged in less risky sexual activity, fewer instances of violent behavior, had a lower risk for substance use, evidenced fewer symptoms of depression, and even demonstrated a decreased risk of suicide compared to adolescents who endorsed low levels of spirituality. These findings, however, should be interpreted cautiously; measures used to assess spirituality, religiosity, and health outcomes varied widely across studies, as did sample sizes and characteristics.

In a study conducted by Hodge, Cardenas, and Montoya (2001), which surveyed 475 youth between the ages of 8 and 17, spirituality predicted low rates of drug use, while religious practice (i.e., going to church) predicted low levels of alcohol use. Furthermore, spiritual/religious affiliation correlates negatively with the presence of a number of negative mental health conditions. For instance, adolescents who endorse moderate to strongly held religious beliefs suffer fewer and less severe depressive symptoms, fewer anxiety symptoms, lower levels of hopelessness, higher levels of self-

esteem, and lower reported suicidal ideation than their non-religious/non-spiritual counterparts (Cotton et al., 2006; Hodge et al., 2001).

Although these studies have highlighted the importance that spirituality may have on outcomes in youth, they did not explore the mechanisms by which spirituality may affect these changes. Additionally, these studies failed to acknowledge the possibility that spirituality may also negatively impact mental health and development in youth. For instance, an emerging literature suggests that *negative religious coping* can adversely affect mental health outcomes in youth. According to van Dyke et al. (2009), negative religious coping refers to, “strategies that include reframing negative life events as punishment from God, and passively deferring responsibility for oneself and one’s situation to God.” (pp. 370). Van Dyke et al. surveyed 76 inner-city youth, and found that negative religious coping significantly predicted depressive, anxious, and somatic symptoms in youth (2009). In another longitudinal study, negative religious coping positively and significantly predicted depressive symptoms in 145 youth in inpatient care followed over a six-month period (Dew et al., 2010). Thus, spirituality may operate in both negative and positive ways to affect the mental health of youth.

Researchers have also prompted the field to adopt a more empirical methodology, as opposed to a value-laden approach (assuming that spirituality is always beneficial to children), to systematic inquiry into spiritual phenomenon (Mahoney et al., 2006). While previous research has demonstrated that spirituality may affect typical youth in both positive and negative ways, there are few studies examining how spirituality may influence both negative and positive outcomes for youth in care who have been exposed to maltreatment. The current study added to the extant literature by examining how

various aspects of spirituality impact multiple dimensions of mental health for children in care, operating from the assumption that spirituality may affect outcomes in both positive and negative ways. Furthermore, varying intervening factors could potentially account for the range of outcomes that youth experience; the current study examined two of these possible mechanisms, specifically coping and social support, and their respective roles in the relations between spirituality and mental health outcomes for foster youth.

### **Exploring Mechanisms by Which Spirituality Affects Outcomes**

**Coping as a mechanism.** Researchers have suggested that spirituality may provide protective benefits to youth in care for a variety of reasons. Spirituality may be related to the coping strategies that children utilize to manage the events that have occurred in their lives; through spirituality, they may be able to explain, understand, and provide a framework of meaning to the maltreatment events they have experienced (Lazarus & Folkman, 1984; Mahoney et al., 2006). Preliminary evidence for this notion has been provided by Kim et al. (2008). In a study of over 190 maltreated youth between the ages of 8 and 12, strong endorsement of spiritual beliefs and practices was associated with low levels of internalizing behaviors for girls and low levels of externalizing behaviors for boys. These authors included two indicators of observable elements of spirituality (e.g., church attendance, and frequency of prayer at meal times), and one indicator of an internal aspect of spirituality (importance of faith). Particular support was found for the importance of the internal indicator of spirituality in predicting outcomes in youth, and the authors concluded, “factors associated with greater religiosity, especially the private aspect of spirituality measured by importance of faith, seem to have the

potential to reduce the effects of high stress levels associated with maltreatment experiences...” (p. 717).

Although not tested directly, the authors proposed that the mechanism by which spirituality provided protective benefit was through individual coping, in that spirituality influences children’s ability to manage stressful life experiences. According to Crawford, Wright, and Masten (2006), internal aspects of spirituality likely provide a framework within which stressors can be understood, resulting in higher confidence in one’s ability to use active or direct methods of coping with seemingly overwhelming stressors. However, an important limitation to previous studies, including the study by Kim et al. (2008), was that researchers utilized only a few items to assess the rather broad and complex construct of spirituality, relying almost exclusively on observable spiritual practices like church attendance. Therefore, the construct of internal spiritual experiences may not have been measured adequately, making the field’s understanding of its potential impact on functioning incomplete.

The relation between coping and outcomes in youth has received greater attention in the literature than the effects of spirituality on outcomes. In initial validation studies of the Behavioral Inventory of Strategic Control (BISC), Little et al. (2000) found that direct coping strategies (e.g., dealing with problems, and trying to solve them) were more predictive of a number of positive psychological outcomes in children than inactive coping strategies (i.e., doing something else instead). Brady et al. (2008) found that, amongst inner-city youth at-risk for negative mental health outcomes due to high levels of exposure to community violence, direct coping strategies predicted more positive psychological well-being than inactive or avoidant coping strategies. Other lines of

research have demonstrated that direct coping strategies mediate the impact of experiencing traumatic events on negative mental health sequelae in children (Chen et al., 2012), and that coping strategies can predict sexual revictimization during adulthood for youth with histories of sexual abuse (Filipas & Ullman, 2006).

These studies suggest that coping, specifically direct coping, is an important factor for predicting psychological outcomes in both typical youth and in youth exposed to maltreatment. Coupled with Kim's (2008) suggestion that coping might be the active mechanism by which internal aspects of spirituality affect change in outcomes, these two lines of research suggest a mediated or indirect relation between *internal* aspects of spirituality and outcomes in children through coping. The current study attempted to expand on these preliminary findings and added to the field by utilizing multiple indicators to assess spirituality, and by providing the first empirical test of coping as an indirect mechanism by which spirituality affects outcomes in foster youth (see Figure 1).

*Figure 1. Theoretical Pathways between Spirituality, Coping, and Psychological Outcomes*



**Social support as a mechanism.** In addition to influencing youth adjustment through its impact on internal processes (i.e. coping), spirituality may also affect external factors important to youths' overall well-being. For example, spirituality may affect adjustment by providing a means to access alternate sources of social support (e.g., new

friends, church involvement, and opportunities to participate in church activities), which can assist youth through emotional difficulties. Further supporting this notion, Donnelly, Matsuba, Hart, and Atkins (2006) noted that belonging to a church may increase the amount of people and subsequent social support available to the child; they further noted that the values taught in religious institutions promote civic engagement (i.e. community service) and further interaction with peers who are also religiously inclined and who may function as sources of positive behavior modeling. According to Smith (2003), engagement in religious congregations and activities, “can provide relatively dense networks of relational ties within which youth are embedded, involving people who pay attention to the lives of youth, and who can provide oversight of and information about youth to their parents and other people well positioned to discourage negative and encourage positive life practices among youth” (p. 260). Smith also provided support for the notion that the positive effects of religious institutions on youth functioning can occur both through increased social resources available to the youth as well increased opportunities for parents to provide monitoring and to communicate with other parents regarding appropriate parenting practices and youth behavioral expectations (2003).

Prior research has suggested that social support can be an important mediator of the relation between exposure to violence and negative youth outcomes; one study found that, among a sample of African-American youth ages 10-15, perceptions of available social support mediated the relation between exposure to community violence and aggression (Benhorin & McMahon, 2008). Among a sample of preschoolers exposed to community violence, Oravec, Osteen, Sharpe, and Randolph provided evidence that social support, which impacted subsequent social functioning for these youth, indirectly



affected the relations between experiencing community and interpersonal violence and subsequent externalizing behaviors (2011). Daining and DePanfilis (2007) found that, among a sample of foster youth transitioning to adult care, social support contributed significantly and uniquely to youth well-being, above and beyond the effects of perceived stress, gender, and age of time in care, suggesting positive effects of social support for youth even during the transition out of care and into adult life.

King and Furrow (2004) found that youth who participate more frequently in church activities reported higher levels of positive social interactions and trust in their relationships compared to youth who attended church activities infrequently. Crawford, et al. (2006) noted that spiritual practices may additionally increase exposure to prosocial peers and mentors. Because many religions stress the importance of service and support to others, and also provide opportunities for their members to build social relationships, involvement in spiritual and religious opportunities likely also give children an additional source for social support (Schwartz, Bukowski, & Aoki, 2006). These lines of research provide evidence for a possible mediated or indirect relation between *observable* aspects of spirituality and outcomes through social support, a relation that was tested in foster youth for the current study (see Figure 2).

Figure 2. Theoretical Pathways between Spirituality, Social Support, and Psychological Outcomes



### Defining Spirituality in Research

Although establishing the pathways by which spirituality may relate to mental health outcomes in youth is important, it is necessary to first examine how the construct of spirituality is conceptualized and operationally defined. As the previous studies presented indicate, the use of the term *spirituality* has encompassed both internal processes (i.e. beliefs in a higher power) and external practices (e.g., going to church, participating in religious rituals, and prayer). Thus, the scientific study of spirituality, as well as its relation to health outcomes in children and adolescents, is complicated by the fact that varying methods of measuring spirituality exist. A common practice in previous research has been to focus on outward expressions of spirituality, commonly referred to as religiosity, at the exclusion of inward spiritual experiences, which also may be important (Plante & Thoresen, 2007). *Religiosity* can be defined as the outward expression of faith in a higher power, such as attendance at church services, participation in group charity and congregation, and external demonstrations of belief in a higher power. *Spirituality* refers to the internal, introspective, existential dimension of spiritual experience (Miller & Thoresen, 2003).

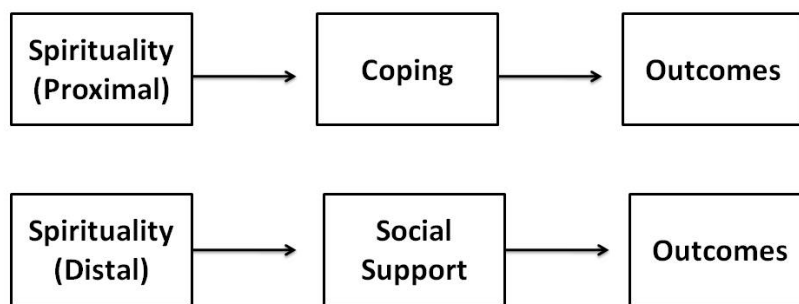
Spirituality is likely a multidimensional entity. Cotton et al. (2006) noted that past research has tended to observe *distal* (observable) facets of spirituality, while largely ignoring *proximal* (internal) aspects. While distal aspects, such as church attendance and observation of religious rituals are important, a reliance solely on these aspects of religious experience likely undermines the complexity of how spiritual beliefs affect children. Zinnbauer and colleagues (1997) summarized recent directions in spirituality research by stating that, “Spirituality is now commonly regarded as an individual phenomenon and identified with things such as personal transcendence, supra consciousness sensitivity, and meaningfulness... Religiousness, in contrast, is now often described narrowly as formally structured and identified with religious institutions and prescribed theology and rituals” (p. 563).

While these definitions provide a useful theoretical distinction, few previous studies have attempted to examine whether the two constructs are meaningfully distinct in scientific inquiry. The current study provides clarity to disparate lines of study by examining empirically whether these proximal and distal aspects are components of the same construct, and whether they differentially predict outcomes in children. In the current study, it was assumed that spirituality contains both proximal (i.e., internal belief) and distal (i.e., observable, behavioral) qualities, and that both are important mechanisms in predicting outcomes. Although theory dictates that both proximal and distal aspects exist, there is far less direct testing and support for the effects of these proximal aspects. However, as mentioned earlier, Kim (2008) suggested that internal aspects of spirituality might exert their effects on outcomes through coping, representing an internal process. This notion is also supported by the emerging literature on religious coping, which

suggests that reliance solely on observable behaviors when examining spirituality a) does not accurately reflect how internal mechanisms operate for children under stressful life events, and b) fails to demonstrate unique resources available to children afforded by internal mechanisms (Mahoney et al., 2006). This recognition of internal factors does not discount the fact that distal facets of spirituality, including attendance at congregation, prayer, and participation in religious rituals, are likely also important to youth outcomes through external processes; for instance, results from a number of studies suggest that distal elements (i.e., frequency of prayer and attendance at church activities) relate to positive social relationships and access to prosocial peers that can affect youth adjustment (Crawford et al., 2006; Schwartz et al., 2006).

Bridges and Moore (2002) noted that a variety of measures have been employed across studies, and that most of the measures utilized have relied on single-item indicators of spirituality as a construct. By sampling only from distal domains of spirituality, which are likely important alongside proximal aspects, internal processes important to spirituality as a protective mechanism in the lives of youth may be overlooked. Because it is likely that both proximal and distal aspects are important to spirituality in children (Benhorin & McMahon, 2008; Kim, 2008), the current study examined both proximal and distal indicators, to provide a clearer examination of the mechanisms by which both aspects of spirituality may be differentially related to outcomes in youth (see Figure 3).

*Figure 3. Theoretical Pathways between Proximal and Distal Facets of Spirituality, Coping, Social Support, and Psychological Outcomes*



### **Limits of Past Research and Current Study**

A number of limitations have affected previous studies examining the impact of spirituality in the link between maltreatment experiences and outcomes in youth. First, previous studies have offered little in the way of examining mechanisms by which spirituality may affect youth functioning. Second, the use of single or unidimensional instruments to capture the broad range of spiritual experiences in youth may have undermined the potential importance of internal aspects of spiritual phenomenon. Furthermore, a majority of studies have surveyed typical children, largely ignoring the function that spirituality may have for youth at-risk for negative mental health outcomes. Finally, previous studies have examined the protective benefit of spirituality in buffering against behavioral and emotional difficulties, ignoring almost entirely the possible benefits of spirituality to adaptive functioning in youth. Preliminary evidence suggests positive effects of spirituality on the well-being of foster youth at-risk for negative mental

health outcomes. Past limitations have resulted in little understanding of mechanisms whereby spirituality affects change in children; this lack of understanding makes it difficult for clinicians to incorporate spirituality as a potential resource in working with youth in foster care.

The current study examined the role of spirituality in the relation between maltreatment and psychological outcomes in foster youth. Following recommendations made by Hodge et al. (2001), the current study further illuminated the role of spirituality in the lives of children and adolescents by (a) including reports from children, rather than relying on parent report to capture how spiritual beliefs may impact the functioning of children, (b) capturing spiritual beliefs from children without relying exclusively on distal indicators of spirituality (e.g., church attendance and worship activities), (c) expanding the field's understanding of the role of spirituality by examining both negative and positive behavioral outcomes, and (d) extending empirical study of spirituality to populations of children at-risk for negative mental health outcomes due to maltreatment experiences. This final point is particularly important given that spirituality, a potentially constant internal and external experience, may be especially relevant to children in foster care given the numerous life disruptions they encounter. A spiritual life may be an asset to youth mental health; however, to date, this relation remains largely unexplored.

It was hypothesized that: both proximal (a1) and distal (a2) indicators of spiritual functioning would be inversely related to internalizing and externalizing problems, both proximal (b1) and distal (b2) indicators of spiritual functioning would be positively related to adaptive functioning, and (c1) proximal indicators of spiritual functioning would be positively related to direct coping and direct coping would be positively related

to adaptive functioning. It was also hypothesized that proximal indicators of spiritual functioning would be positively related to direct coping, which would be negatively related to internalizing outcomes (c2) and externalizing outcomes (c3). Finally, it was hypothesized that (d1) distal indicators of spiritual functioning would be positively related to social support, which would be positively related to adaptive functioning in youth. It was also hypothesized that distal indicators of spiritual functioning would be positively related to social support, which would be negatively related to internalizing (d2) and externalizing (d3) outcomes in youth. Finally, it was hypothesized that these relations would also be evident when both proximal and distal indicators were simultaneously included in a collapsed model test; specifically, it was hypothesized that direct coping would evidence significant indirect effects on the relation between proximal indicators of spiritual functioning and youth-reported adaptive outcomes, while social support would evidence significant indirect effects on the relation between distal indicators of spiritual functioning and youth-reported adaptive outcomes (e1). These tests were repeated for youth-reported internalizing outcomes (e2), youth-reported externalizing outcomes (e3), adult-reported adaptive outcomes (e4), adult-reported internalizing outcomes (e5) and adult-reported externalizing behaviors of foster youth (e6). True mediated relations cannot be tested without longitudinal data; therefore, the present study examined proposed mediated pathways by including both direct and indirect effect tests and nonparametric sampling (described below), a conservative approach to studying mediation.

## Methods

### Participants

Participants were 159 youth in foster or residential care (between the ages of 8 and 21 years, [ $M = 13.59$ ,  $SD = 3.01$  years]) and their caregivers. The original sample size for the current study consisted of reports from 174 youth; however, 15 youth were excluded from final analyses due to scores indicating possible mental retardation on a screening measure of cognitive functioning utilized as part of the larger study (the Kaufman Brief Intelligence Test [K-BIT; Kaufman, 2006]). Dowling et al. (2004) found a medium effect size for spirituality on youth behavioral outcomes in a sample of 1,000 children ( $R^2 = 0.40$ ). Dowling et al. utilized structural equation modeling to obtain their effect size estimates, which likely represent true estimates corrected for measurement error. An estimated minimum sample size was calculated utilizing *G-Power* (Faul, Erdfelder, Lang, & Buchner, 2007), with  $f^2 = .19$ ,  $\alpha = .01$ , power = .80, and two predictors (as well as an additional estimate for indirect effects).<sup>1</sup> Results from the power analysis indicated that a minimum sample size of 88 participants was necessary to obtain the expected medium effect size and complete intended analyses.

Caregivers included either foster care providers or residential center staff (e.g., therapists, mental health technicians). Participants lived within 20 miles of a medium-sized, midwestern city. According to recent Adoption and Foster Care Analysis and

---

<sup>1</sup> While a medium effect size has been found for the relation between spirituality and behavioral outcomes in previous research (see Dowling et al., 2004), the current study applied a more conservative power estimate (set at .80). Additional power analyses indicated that a minimum sample size of 55 would be required to obtain the intended medium effect size.



Reporting System (AFCARS) data, a large majority of youth in foster care are Caucasian (Non-Hispanic [40%]) or African American (Non-Hispanic [31%]), while approximately 20% are Hispanic (AFCARS, 2009). Nine percent of the estimated 460,000 youth in foster care during the 2008 fiscal year were classified as having an ethnicity other than those previously mentioned. According to the same survey, youth in foster care are approximately equal in terms of gender representation (47% female, 53% male).

Foster care statistics for the state of Missouri differ somewhat from national figures in terms of ethnic representation; according to the Missouri Division of Family Service, 28% of youth in Missouri state care are African American, 66% are Caucasian, and 3% are Hispanic (C. Collins, Children's Division, personal communication, September 7, 2010). The obtained sample was composed of a higher percentage of African American foster youth than is represented in the state of Missouri (50% vs. 28%), and a smaller percentage of Caucasian children when compared to statewide estimates (30% obtained compared to 66% statewide). The obtained sample contained a percentage of Latino and/or Hispanic children comparable to statewide representation (3% obtained vs. 3% statewide). Approximately 15% of the obtained sample was identified by caregivers as multiracial, belonging to two or more ethnic groups. The obtained sample closely mirrored statewide and national averages in terms of gender representation (46% female and 54% male for the obtained sample vs. 48% female and 52% male statewide).

According to the Department of Social Services responsible for foster parent statistics within the target state, foster parent incomes range from less than \$10,000 to more than \$80,000 yearly (modal income = \$21,000 to \$30,000 annually). The modal number of persons living inside of foster homes within the geographic target area is three,

with a substantial majority of residences containing between two and seven persons (C. Collins, Children's Division, personal communication, September 09, 2010). Within the obtained sample, 35% of adult participants refused to respond regarding their combined annual household income. A bimodal distribution existed among adult reporters who provided their annual income, with the largest percentage of respondents reporting between \$20,000 to \$30,000 annually (15%) and \$50,000 to \$60,000 annually (15%). Eight percent of adult respondents reported making less than \$20,000 yearly, and 11% reported earning more than \$60,000 annually. For the obtained sample, all participants surveyed attended regular classrooms, and did not have a history of Mental Retardation or Pervasive Developmental disorders.

## **Measures**

**Demographics.** To describe the sample, caregivers were asked to complete a demographic form including general information about the youth (e.g., age, date of birth, grade, ethnicity, gender, and medical/mental health history). The demographic form also included questions about the caregiver (e.g., marital status, educational attainment, income, and occupation). Finally, the questionnaire contained questions related to general living arrangements (e.g., siblings in the household, and number of family members).

**Spirituality - Proximal Aspects.** The Youth Spirituality Scale (YSS; Sifers, Warren, & Jackson, 2012) was administered to youth participants to assess spiritual beliefs and the importance of spirituality. The YSS is a 20-item self-report measure, asking children to indicate how often they endorse a number of spiritual beliefs and practices. Initial validation for the YSS supported the existence of three factors, including Relationship with God/Higher Power (RG), Relationship with Others (RO), and

Existential Well-Being (EWB) domains. The RG scale contains items measuring the importance and strength of youth's internal relationships with a higher power (i.e., "How often do you trust God or a Higher Power?"). The RO scale contains items measuring relations with others based on internal spiritual values (i.e., "How often do you forgive others?"). The EWB scale contains an item measuring use of internal spiritual beliefs to provide explanations for events (i.e., "How often are you sure that things happen for a reason?"). These factors can be combined to form a Total YSS score. For the present study, strong internal consistency was obtained for the YSS Total Scale Score ( $\alpha = .89$ ), indicating high scale reliability. Further factor analytic procedures were conducted to obtain the final *Spirituality* scale utilized in final analyses (described below).

**Spirituality - Distal Aspects.** Characteristics of distal aspects of spirituality were assessed utilizing youth report on the Family Environment Scale (FES; Moos & Moos, 1986). The FES is a 90-item True/False measure yielding ten subscales (Cohesion, Expressiveness, Conflict, Independence, Achievement Orientation, Intellectual-Cultural Orientation, Active-Recreational Orientation, Moral-Religious Emphasis, Organization, and Control). These 10 subscales are theorized to measure three underlying constructs, specifically Relationship Dimensions, Personal Growth Dimensions, and System Maintenance Dimensions. The current study utilized the Moral Religious Emphasis (MRE) subscale; during measure standardization, Moos and Moos found moderate internal consistency for this scale ( $\alpha = .78$ ). Internal consistency obtained for the current sample was somewhat lower; Alpha coefficient for the child report FES MRE scale was .66, indicating moderate scale reliability for this scale. Further factor analytic procedures

were conducted with the child reported YSS and FES MRE scores to compose the *Spirituality* scale used for the current study (described below).

### **Proximal/Distal Spirituality Scale Composition**

Because neither of the aforementioned measures of spiritual functioning have been utilized with foster youth, it was important to first establish the existence of two distinct domains (proximal and distal) of spirituality within the obtained sample. The study predictions were based on the expected existence of these two factors of spirituality, and the composition of these two hypothetical scales required empirical support prior to testing the expected relations between the study variables. The current study utilized a data-driven approach (confirmatory and exploratory factor analyses) in testing for the presence of these two factors. In this approach, scales were constructed (using varimax rotation) from items loading highly onto their respective factors, allowing items to cross-load onto multiple factors. Items within each factor were examined for cross-loadings, and items loading significantly on two factors (i.e., loading higher than .30) were discarded from subsequent analyses. Items loading highly and uniquely onto a single factor (i.e., loading higher than .30) were maintained within each scale and utilized for subsequent analyses. Factors meeting an eigenvalue criteria of 1 and accounting for a significant amount of variance in items were maintained and included in subsequent analyses (Brown, 2006). Commensurate with the data-driven approach, resultant analyses were conducted using emergent, rather than hypothesized, factors.

**Factor Analyses of Youth Reported YSS and FES MRE Scales.** Results from the initial CFA indicated that the two proposed factors accounted for 39% of the total item variance. Although both factors met the specified eigenvalue criteria cutoff,

numerous items from both the FES MRE and the YSS did not load highly and uniquely onto the proposed separate factors (see Table 1 for specific factor loadings). Because the expected solution was not obtained, an exploratory factor analysis (EFA) was conducted, with varimax rotation, and using the aforementioned cutoff criteria. Results from the EFA indicated 8 potential factors meeting eigenvalue criteria, accounting for 67% of the total item variance. However, 5 of these factors did not account for significant portions of variance above and beyond the first 3 factors, which demonstrated the highest eigenvalues. The third factor contained only two items, and neither of these items loaded uniquely onto this third factor.

*Table 1. Factor Loadings for Confirmatory Factor Analysis With Varimax Rotation of Youth Spirituality Scale (All Items) and Family Environment Scale – Moral Religious Emphasis Items (Youth Report)*

Scale	Proximal Spirituality (Factor 1)	Distal Spirituality (Factor 2)
YSS Item 1	<b>.824</b>	.233
YSS Item 2	.058	<b>.581</b>
YSS Item 3	<b>.642</b>	.265
YSS Item 4	-.119	<b>.751</b>
YSS Item 5	.185	<b>.494</b>
YSS Item 6	<b>.707</b>	.186
YSS Item 7	-.122	<b>.769</b>
YSS Item 8	<b>.807</b>	.200
YSS Item 9	.078	<b>.627</b>
YSS Item 10	.128	<b>.579</b>
YSS Item 11	<b>.704</b>	.240
YSS Item 12	.265	<b>.354</b>
YSS Item 13	<b>.713</b>	.342
YSS Item 15	.262	<b>.619</b>
YSS Item 16	<b>.868</b>	.133
YSS Item 17	.114	<b>.531</b>
YSS Item 18	<b>.822</b>	.185
YSS Item 19	.289	.258
YSS Item 20	.162	.293
FES MRE Item 08	<b>.609</b>	.091
FES MRE Item 18	<b>.670</b>	.109
FES MRE Item 28	<b>.398</b>	.144
FES MRE Item 38	<b>.417</b>	-.021
FES MRE Item 48	.043	.062
FES MRE Item 58	<b>.330</b>	.035
FES MRE Item 68	.217	-.007
FES MRE Item 78	<b>.746</b>	.111
FES MRE Item 88	.289	<b>.458</b>

*Note.* Factor loadings > .30 are in boldface. YSS = Youth Spirituality Scale; FES MRE = Family Environment Scale, Moral Religious Emphasis Subscale.

As a result of the EFA, two factors emerged as significant for use in further analyses (see Table 2 for specific factor loadings). The first factor, consisting of 13 items

(both FES MRE and YSS items), accounted for a total of 29% of item variance. The second factor, which consisted of 10 items (YSS only), accounted for an additional 10% of item variance. Certain items from the YSS, specifically 2, 5, 9, 10, 15, and 17, demonstrated high cross-loadings on multiples factors; FES items 48 and 68 did not load significantly onto either 2 factors. For the final analyses, 11 items (7 from the YSS and 4 from the FES) were eliminated for failing to meet scale criteria described previously.

*Table 2. Factor Loadings for Exploratory Factor Analysis With Varimax Rotation of Youth Spirituality Scale (All Items) and Family Environment Scale – Moral Religious Emphasis Items (Youth Report)*

Scale	Factor 1	Factor 2
YSS Item 1	<b>.837</b>	-.184
YSS Item 2	<b>.326</b>	<b>.485</b>
YSS Item 3	<b>.691</b>	-.070
YSS Item 4	.250	<b>.719</b>
YSS Item 5	<b>.396</b>	<b>.348</b>
YSS Item 6	<b>.711</b>	-.170
YSS Item 7	.255	<b>.735</b>
YSS Item 8	<b>.806</b>	-.205
YSS Item 9	<b>.365</b>	<b>.516</b>
YSS Item 10	<b>.387</b>	<b>.450</b>
YSS Item 11	<b>.734</b>	-.121
YSS Item 12	<b>.401</b>	.187
YSS Item 13	<b>.790</b>	-.035
YSS Item 15	<b>.523</b>	<b>.422</b>
YSS Item 16	<b>.828</b>	-.293
YSS Item 17	<b>.351</b>	<b>.414</b>
YSS Item 18	<b>.812</b>	-.225
YSS Item 19	<b>.471</b>	.267
YSS Item 20	.281	.182
FES MRE Item 08	<b>.580</b>	-.207
FES MRE Item 18	<b>.642</b>	-.220
FES MRE Item 28	<b>.419</b>	-.061
FES MRE Item 38	<b>.358</b>	-.215
FES MRE Item 48	.067	.035
FES MRE Item 58	<b>.308</b>	-.125
FES MRE Item 68	.188	-.109
FES MRE Item 78	<b>.710</b>	-.255
FES MRE Item 88	<b>.306</b>	-.041

*Note.* Factor loadings > .30 are in boldface. YSS = Youth Spirituality Scale; FES MRE = Family Environment Scale, Moral Religious Emphasis Subscale.

A final CFA was conducted with two proposed factors containing the 17 remaining items (see Table 3); the first factor contained 6 YSS items and 5 FES items from child report, and the second factor contained 6 YSS items from child report. Results



from the final confirmatory factor analysis indicated that these 17 items loaded highly and uniquely onto two distinct factors (11 items total on factor 1, and 6 items total on factor 2), accounting for a total of 49% of the total item variance. Coefficient alphas were calculated for the resulting two factors; Factor 1 evidenced strong internal consistency ( $\alpha = .88$ ), and Factor 2 evidenced moderate internal consistency ( $\alpha = .74$ ).

*Table 3. Factor Loadings for Confirmatory Factor Analysis With Varimax Rotation of Youth Spirituality Scale (Selected Items) and Family Environment Scale – Moral Religious Emphasis Items (Selected Items, Youth Report)*

Scale	Factor 1: <i>Spirituality</i>	Factor 2: <i>Relationship with Others</i>
YSS Item 1	<b>.807</b>	.206
YSS Item 3	<b>.679</b>	.256
YSS Item 6	<b>.733</b>	.165
YSS Item 11	<b>.733</b>	.165
YSS Item 13	<b>.753</b>	.300
YSS Item 18	<b>.779</b>	.215
FES MRE Item 08	<b>.651</b>	.036
FES MRE Item 18	<b>.703</b>	.046
FES MRE Item 28	<b>.442</b>	.091
FES MRE Item 38	<b>.396</b>	-.076
FES MRE Item 78	<b>.777</b>	.059
YSS Item 4	-.073	<b>.783</b>
YSS Item 5	.217	<b>.486</b>
YSS Item 7	-.094	<b>.828</b>
YSS Item 15	.305	<b>.531</b>
YSS Item 17	.090	<b>.700</b>
YSS Item 19	.287	<b>.551</b>

*Note.* Factor loadings  $> .30$  are in boldface. YSS = Youth Spirituality Scale; FES MRE = Family Environment Scale, Moral Religious Emphasis Subscale.

**Two-Factor Solution for Current Study: the Spirituality and Relationship with Others Factors.** Overall, results from the preceding factor analyses did not support the existence of distinct *proximal* (YSS only) and *distal* (FES MRE only) *spirituality*

scales as originally hypothesized. However, a 2-factor solution was obtained. The first factor was composed of a combination of youth reported YSS and FES MRE items (11 total). Examination of item content from the first obtained factor indicated substantial content related to belief in God or a Higher Power, spiritual practice (e.g., church attendance and prayer), and spiritual belief. Contrary to the original hypothesis, this factor contained both proximal (internal) and distal (observable) facets of spirituality. This factor, entitled *Spirituality*, formed a superordinate category of spiritual beliefs and practices (compared to original hypotheses, where proximal and distal qualities were thought to be separate); the items contained within the Spirituality factor were related to any beliefs, ideas, and practices involving God or a Higher Power.

The second obtained factor was composed of youth - reported YSS items (6 items total). Further examination of item content contained in Factor 2 indicated themes related to relationships with others (e.g., trusting in others, and being nice) as well as performance of behaviors that sanction social cohesion (e.g., apologizing to others, and forgiving others often). Contrary to the original hypothesis, this factor did not contain spiritual content *per se*, but could be interpreted as a morally and spiritually influenced way of interacting with and relating with others to maintain social relationships. Interestingly, a majority of the items derived for factor two closely mirrored the scale structure from the original YSS (Relationship with Others scale; Sifers et al., 2012). In keeping with the naming convention of the YSS, this second factor was entitled *Relationship with Others (RO)*. These 2 final factors (Spirituality and Relationship with Others) were used and interpreted in subsequent analyses and discussion as the data-derived dimensions of spirituality in youth.

### **Behavioral Inventory for Strategic Control (Direct Coping Strategies).**

The Behavioral Inventory for Strategic Control (BISC; Little, Lopez, & Wanner, 2001) was utilized to assess youths' coping methods across a number of domains (e.g., general, academic, and social). The BISC is a 180-item youth-report measure yielding seven subscales indicative of various coping methods employed by children in commonly encountered situations. For the current study, youth-reports on the Direct Action subscale were included in analyses, to assess proactive coping strategies (e.g., trying to cope with problems as they arise, and trying to solve problems). According to Little et al. (2000), the Direct Action subscale presents a unique coping dimension; in their longitudinal validation study, Direct Action was found to present a distinct factor when compared to Indirect Action ( $r = .05$ ), Prosocial Action ( $r = .35$ ), and a Social Cooperation subscale from the same measure. Previous research has provided evidence for the construct validity of the BISC. A study conducted by Perez, Little, and Henrich (2009) demonstrated moderate relations ( $r = .57$ ) between the BISC and personal agency, a unique construct that shares similar qualities with coping (i.e., perceived ability of children to cope effectively with their problems). Discriminant validity has been demonstrated by findings that the Direct Action subscale correlates only moderately with measures of anxiety (STAIC; Spielberger, 1972), feelings of loneliness ( $r = -.20$ ), depressive symptoms ( $r = -.15$ ) and having friends ( $r = .18$ ) (Little et al., 2001; Perez et al., 2009). Predictive validity has been demonstrated for the Direct Action subscale, in that the construct accounted for significant portions of the variance in anxiety outcomes ( $R^2 = .24$ ), having friends ( $R^2 = .43$ ), and feelings of loneliness ( $R^2 = .46$ ) when measured across time. The BISC has an additional benefit of allowing the researcher to

design “frames” (sentence stems) to apply to stressors that the child may currently be experiencing. For example, one of the BISC frames was adapted to ask foster youth in the study about how they cope with difficulties changing schools and homes. Thus, the BISC is a coping measure easily adapted to foster youth, and it likely captures their coping styles in relation to situations they commonly encounter. For the current study, internal consistency for the BISC Direct Action Scale was strong ( $\alpha = .96$ ), indicating high reliability.

**Social Support Scale for Children (Social Support).** The Social Support Scale for Children (SSSC; Harter, 1985a) was utilized to assess youths’ levels of perceived social support from a number of sources, including parents, friends, teachers, and classmates. The SSSC is a 24-item, forced choice measure which asks children to first indicate which of two hypothetical children they are more similar to, and second to choose whether a number of statements are “Sort of True” or “Really True.” The SSSC yields four composite scores (Parent Support, Friend Support, Teacher Support, and Classmate Support), as well as a Total Support score created by summing and averaging mean subscale scores across the four domains. For the present study, the Total Support score was utilized as an overall indicator of social support perceived by the child or adolescent.

Alpha coefficients for the various SSSC scales ranged from moderate to high, between  $\alpha = .76$  (Classmate Support subscale) and  $\alpha = .81$  (Parent and Friend Support Subscales). The coefficient alpha for the Total Support score was .68. Evidence for concurrent validity has been examined by Harter (1985a), and moderate correlations (between .35 and .49) have been found between SSSC scales and various indicators of

global self-worth from the Self Perception Profile for Children (Harter, 1985b). At the subscale level, the Classmate support subscale of the SSSC has been found to correlate moderately ( $r = .69$ ) with the Social Acceptance/Popularity subscale from the Self Perception Profile for Children (Harter, 1985b), which measures perceptions of popularity amongst classmates. The Friend Support subscale of the SSSC has been shown to correlate moderately ( $r = .46$ ) with the Social Skills Scale for Children, which measures perceived ability to disclose personal feelings to friends. The Parent and Teacher Support subscales correlated moderately ( $r = .49$ ) with a difference score reflecting discrepancy between children's perceptions of ability across domains and their perceptions of parental importance ratings across these domains. The authors found these difference scores to predict perceived parent and teacher support, providing evidence that children with values congruent to their parents and teachers are more likely to perceive a higher level of parental and teacher support.

**Behavioral Assessment System for Children – Second Edition (Behavioral Outcomes) Adult Report.** The Behavior Assessment System for Children – Second Edition (BASC – II; Reynolds & Kamphaus, 2004) was administered to caregivers to assess both problem behaviors and adaptive skills. One of two versions of the BASC – II was given to caregivers according to the youth's age (BASC – II – Parent-report for children ages 6 to 11; BASC – II – Parent-report for adolescents ages 12 to 16). The BASC – II Parent Report: Child (PRC) version is a 160-item questionnaire yielding 14 subscales and 4 composite scores. Respondents are asked to rate a number of behaviors on a 5 – point Likert scale (“Never” to “Almost Always”); composite indices include Externalizing, Internalizing, Behavioral Symptoms, and Adaptive Skill scores. The

BASC – II Parent Report: Adolescent (PRA) version yields indices and subscales similar to the child version, but contains 150 items. For the current study, the Externalizing, Internalizing, and Adaptive Skill Composite scales were included in analyses as indicators of behavioral, emotional, and adaptive functioning in youth.

Strong internal consistency was found during measure development for composite indices and subscales on the BASC – II parent forms (alpha coefficients between .72 and .95,  $p < .001$ ). For the current study, internal consistencies were generally high across parent report subscales and composite indices (alpha coefficients between .74 and .87,  $p < .001$ ). BASC – II subscale score correlations were examined for the obtained sample to determine the degree of relation among subscales within each composite. Correlations ranged from moderate to high among scales comprising the Externalizing Composite (between .67 and .74), the Internalizing Composite (between .41 and .66), and the Adaptive Skills Composite (between .42 and .76).

**Youth Report.** The Behavior Assessment System for Children – Second Edition (BASC – II; Reynolds & Kamphaus, 2004) was administered to youth to assess both internalizing and behavioral problems, as well as personal adjustment. One of two versions of the BASC – II was given to youth respondents according to age (BASC – II – Child Report = ages 8 to 11; BASC – II – Adolescent Report = ages 12 to 21). The BASC – II Self Report: Child (SRP - C) version is a 139-item questionnaire yielding 14 subscales and 5 composite scores. Respondents are asked to rate a number of behaviors on a 5 – point Likert scale (“Never” to “Almost Always”); composite indices include Emotional Symptoms, Inattention/Hyperactivity, Internalizing Problems, Personal Adjustment, and School Problems scores. The BASC – II Self Report: Adolescent (SRA)

version contains 176 items, and yields indices and subscales similar to the child version (with an additional Sensation Seeking and Somatization scale). For the current study, the Internalizing, Inattention/Hyperactivity, and Personal Adjustment Composite scales were included in analyses as indicators of self-reported emotional and adaptive functioning in youth.

Strong internal consistency was found during measure development for composite indices and subscales on the BASC – II youth forms (alpha coefficients between .73 and .95,  $p < .001$ ). For the current study, alpha coefficients between .61 (Personal Adjustment Composite) and .87 (Externalizing Composite) were obtained, suggesting moderate to high internal Composite Score reliability. BASC – II subscale score correlations were examined for the obtained sample to determine the degree of relation among subscales within each composite. Correlations ranged from in strength among scales comprising the Inattention/Hyperactivity Composite ( $r = .66$ ), the Internalizing Composite (between .42 and .72), and the Personal Adjustment Composite (between .22 and .60).

A variety of methods have been utilized to establish the validity of the BASC – II youth report and parent report measures. First, the BASC – II has been compared to other youth behavior checklists. As an example, similarly named composite scales on the Achenbach System of Empirically Based Assessment Child Behavior Checklist (ASEBA; Achenbach & Rescorla, 2004) have been found to correlate highly with scales from the BASC – II parent report and youth report forms.

Both adult and youth reports of emotional, behavioral, and adaptive functioning were included in the current analyses for a number of reasons. One, utilization of multiple reporters minimized response bias which would likely be present from reliance solely on

child or adult reports of child behavior. Two, adult and youth agreement on emotional and behavioral ratings often differ; youth may have a more accurate understanding of internal states unobservable to adults, while adults may have greater insight into externalizing problems in youth (Rey, Schrader, & Morris-Yates, 1992). Third, the use of both adult and youth reports of behavioral outcomes has been recommended as an important next step for empirical study in spiritual research (Roehlkepartain, King, Wagener, & Benson, 2006).

### **Procedures**

**Recruitment.** The data for the current study were collected as part of a larger, federally funded study examining pathways to positive adjustment for youth in foster care. Prior to recruitment, procedures were approved by the state Division of Family Services (DFS), Jackson County Circuit Court, and a university Institutional Review Board. Participants were recruited from a variety of sources. First, a list of eligible foster families in the target area was obtained from the Midwest Foster Care and Adoption Association (MFCAA) and the Division of Family Services (DFS). Direct area managers within the system were also contacted regarding recruitment. Following discussion of the rationale and plan, permission to contact caregivers of school-age foster youth was obtained. Caregivers were mailed recruitment letters with postage-paid return envelopes to indicate interest in participation. Caregivers expressing interest in participating were contacted via telephone, provided with the rationale and purpose of the study, and scheduled for a data collection appointment at a convenient location (e.g., community center, MFCAA meeting site, residential center, etc.). Caregivers expressing interest in participation (whether via phone or mail contact) were contacted by a graduate-level



research assistant, who answered study-related questions from interested caregivers and confirmed that the youth met study criteria (e.g., school-age foster child, attendance in a regular classroom, and no history of Mental Retardation or Pervasive Developmental Disorder).

**Survey Administration.** Because the data from the proposed study was a part of a larger study, administration of survey measures took approximately three hours for youth participants to complete; surveys were administered via Audio Computer Assisted Survey Interview (A-CASI, see below). Adult participants completed study surveys in approximately one hour. Surveys were administered by graduate research assistants at various community locations, or at residential centers. Assent was obtained from youth participants, and informed consent was obtained from adult reporters. Following survey administration, adult reporters and youth respondents participated in individual debriefing sessions with a graduate research assistant. Debriefing sessions were conducted to ameliorate the effects of stress caused by the survey, and also to follow up on current abuse or suicidal ideation endorsed by youth participants. In cases where current abuse was reported by youth participants, hotline calls were made to notify the necessary authorities and ensure the youth's safety. Over the course of data collection during the larger study, only one case has been documented where the Division of Family Services was notified of current abuse.

Following individual debriefing sessions, a graduate assistant also conducted a joint debriefing with both adult and youth participants. The graduate research assistant addressed any survey-related distress and informed participants further as to the purpose of and expected gains from the study. Adult participants received a \$60 gift card, and

youth participants received a \$20 gift card for their participation. Follow-up calls were made to adult participants 24-48 hours following data collection as an additional means of monitoring any study-related distress.

**Audio-Computer Assisted Survey Interviewing (A-CASI).** Audio-Computer Assisted Survey Interview (A-CASI) is a computer program that allows for computer administration of study questions to participants. A-CASI includes both visual (on-screen text) and audio (pre-recorded sound files which read questions to participants via headphones) methods of administration. The current study employed this technology, and participants were acclimated to the survey instrument via the inclusion of a tutorial demonstrating how various functions of the computer and the administration interface operated.

A-CASI interviewing has become an increasingly popular method for collecting sensitive health-related information from both adults and youth (de Leeuw, Hox, & Kef, 2003; Rew, Horner, Riesch, & Cauvin, 2004). This method provides numerous advantages over traditional paper and pencil measures by allowing youth greater privacy in responding, more highly standardized administrations, cost-savings in scoring and analyses, and less likelihood of response errors compared to paper and pencil measures (i.e., participants are only able to select one answer on the A-CASI, where children sometimes circle multiple responses for one item on paper and pencil measures). For the current study, utilization of A-CASI also facilitated survey completion by younger children with delayed reading abilities.

Evidence for the effectiveness and utility of A-CASI interviewing with youth has been provided by Romer et al. (1997), who reported that survey data obtained from

computer interviewing demonstrate reliability comparable to face-to face interviews conducted with children. Rew et al. (2004) further reported that their experiences with A-CASI administration to youth have been favorable; in their previous studies, computerized administration held youths' attention longer than paper and pencil measures, and has carried the additional benefits of evoking greater enjoyment and novelty in youth participants, as well as providing greater privacy in responses, when compared to more traditional administration methods (i.e., paper and pencil surveys read aloud by a research assistant).

## **Results**

**Missing Data.** Percentage of missing data was expected to be small due to utilization of A-CASI. According to Little (2010), statistical power increases when certain methods of data imputation are utilized. Little recommended the Expectation Maximization (EM) algorithm imputation method as superior to traditional imputation methods (e.g., list-wise deletion and sample-wise mean substitution) due to the fact that EM produces the best maximum likelihood estimate of the mean and covariance matrix, as well as its capability of incorporating auxiliary variables in deriving missing value estimates. The current study utilized the EM algorithm method for imputation of missing data values, and was conducted in the PASW Statistical package (version 18). As expected, missing data were minimal (less than .4% for adult reporters and less than .5% for youth respondents), and well within the acceptable percentage of missingness for use of the EM algorithm (Little, 2010).

## **Descriptive Statistics**

**Youth Report.** Descriptive statistics (including means and standard deviations) for study measures are presented in Table 4. Youth reports on the data-derived Spirituality factor and on the Relationship with Others (RO) scale were normally distributed (skewness and kurtosis estimates were within  $\pm 1$ ). Youth responses on the BISC and the SSSC were also normally distributed, presenting distributions and mean scores similar to those obtained during measure standardization. (Little et al., 2001; Harter, 1985a). Youths' mean scores on the BASC Internalizing Composite indicated average (i.e, non-clinical) symptom frequency and severity compared to age-matched youth. Youths' reported mean scores on the BASC Inattention/Hyperactivity Composite scale also indicated symptom frequency and severity comparable to age-matched children.

*Table 4. Summary of Intercorrelations, Means, Standard Deviations for Scores on Study Measures*

Measure	1	2	3	4	5	6	7	8	9	10
1. SPIRIT	-									
2. RO	.40*	-								
3. BISC	.18*	.53*	-							
4. SSSC	.20*	.37*	.34*	-						
5. BASC INT CR	-.10	-.26*	-.29*	-.52*	-					
6. BASC INN/HYP CR	-.14	-.26*	-.27*	-.26*	.66*	-				
7. BASC PA CR	.22*	.41*	.41*	.64*	-.67*	-.52*	-			
8. BASC INT AR	-.06	-.19*	-.21*	-.03	.04	.22*	-.13	-		
9. BASC EXT AR	-.08	-.07	-.15	-.16*	.25*	.24*	-.27*	.59*	-	
10. BASC ADAPT AR	.12	.16*	.21*	.07	-.05	-.19*	.12	-.68*	-.42*	-
<i>M</i>	2.39	3.86	3.57	3.34	55.30	57.95	50.55	69.85	61.32	42.81
<i>SD</i>	.61	.60	.70	.52	8.45	9.62	5.97	11.94	9.67	6.09

*Note:* (n = 159 youth and 159 adult participants). SPIRIT = Data-Derived Spirituality Scale (Factor 1), Child Report; RO = Data-Derived Relationship with Others Scale (Factor 2), Youth Report; BISC = Behavioral Inventory of Strategic Control, Direct Action Subscale; SSSC = Social Support Scale for Children; BASC INT CR = Behavioral Assessment System for Children, Second Edition, Internalizing Composite Score, Child Report; BASC INN/HYP CR = Behavioral Assessment System for Children, Second Edition, Inattention/Hyperactivity Composite Score, Child Report; BASC PA CR = Behavioral Assessment System for Children, Second Edition, Personal Adjustment Composite Score, Child Report; BASC INT AR = Behavioral Assessment System for Children, Second Edition, Internalizing Composite Score, Adult Report; BASC EXT AR = Behavioral Assessment System for Children, Second Edition, Externalizing Composite Score, Adult Report; BASC ADAPT AR = Behavioral Assessment System for Children, Second Edition, Adaptive Composite Score, Adult Report. \* $p < .05$ .

Youths' mean scores on the BASC Personal Adjustment Composite, however, were higher than those reported by typical age-matched youth, indicating better adjustment compared to youth surveyed during measure standardization. Results from

independent sample  $t$  tests indicated that youths' scores did not differ significantly on any of the BASC Composite scales, the BISC, the SSSC, or RO scores as a function of age (Children [under 12 years of age] vs. Adolescents [over 12 years of age]). Adolescent reporters evidenced significantly lower mean scores on the Spirituality scale when compared to children (2.26 vs. 2.74 respectively;  $t [157] = 4.72, p < .01$ ); therefore, age was maintained as a covariate in testing subsequent models. Youths' reported means did not differ significantly as a function of gender for any of the study measures.

**Adult Report.** Descriptive statistics (including means and standard deviations) for adult-reported study measures are also presented in Table 4. Mean scores on the adult-reported BASC problem behavior scales (both the Internalizing and Externalizing Composites) indicated significantly higher symptom frequency and severity compared to age-matched youth. Mean scores for the BASC Adaptive Skills Composite were consistent with those obtained in the standardization sample, indicating adaptive skills comparable to age-matched youth (Reynolds & Kamphaus, 2004).

#### **T tests for Study Means: Residential Reporters vs. Foster Homes**

Because study participants came from both residential centers and foster homes, the possibility that participant scores (both adult and youth reporters) differed as a function of location was explored. A number of independent samples  $t$  tests were conducted to determine whether participant mean scale scores differed as a function of location (residential vs. foster home). Results from these analyses are presented in Table 5.

*Table 5. T-Tests Comparing Mean Scale Scores for Foster vs. Residential Participants  
(Mean Difference Derived from Foster – Residential Mean Scores)*

	t score	Df	Mean Difference	CI (95%), Lower Bound	CI (95%), Upper Bound
SSSC	2.35	157	.19	0.29	.35
BASC INT CR	-3.12	157	-4.07	-6.65	-1.58
BASC PA CR	2.19	157	2.05	.17	3.89
BASC INT AR	-2.21	157	-4.13	-7.86	-.63
BASC EXT AR	-2.66	157	-4.01	-7.22	-1.02
BASC ADAPT AR	2.46	157	2.35	.52	4.30

*Note:* (n = 159 youth and 159 adult participants). SSSC = Social Support Scale for Children; BASC INT CR = Behavioral Assessment System for Children, Second Edition, Internalizing Composite Score, Child Report; BASC PA CR = Behavioral Assessment System for Children, Second Edition, Personal Adjustment Composite Score, Child Report; BASC INT AR = Behavioral Assessment System for Children, Second Edition, Internalizing Composite Score, Adult Report; BASC EXT AR = Behavioral Assessment System for Children, Second Edition, Externalizing Composite Score, Adult Report; BASC ADAPT AR = Behavioral Assessment System for Children, Second Edition, Adaptive Composite Score, Adult Report. All scores significant at  $p < .05$ .

Overall, youth from foster homes reported significantly higher SSSC and BASC Personal Adjustment scores when compared to youth from residential facilities ( $t [157] = 2.35, p < .05$  and  $t [157] = 2.19, p < .05$ , respectively); Foster parents reported significantly higher Adaptive Skill Composite scores than adult residential reporters ( $Mean Difference = 2.35, t [157] = 2.46, p < .05$ ). Foster youth reported significantly lower BASC Internalizing problems than youth in residential facilities ( $Mean Difference = -4.07, t [157] = -3.12, p < .05$ ); Foster parents also reported significantly lower BASC

Internalizing and Externalizing Problem scores compared to adult reporters from residential facilities ( $t [157] = -2.21, p < .05$  and  $t [157] = -2.66, p < .05$ , respectively). Thus, residential youth in the current study evidenced greater psychopathology and less perceived support and positive adjustment overall compared to youth from foster homes. As a result, placement status (residential or foster home) was included in subsequent analyses as a covariate.

### **Correlations Among Study Variables**

Intercorrelations between study measures are presented in Table 4. Bivariate correlation analyses were conducted to test study hypothesis a1, that spirituality (as measured by factor-derived Spirituality scale scores) would be inversely related to both internalizing and externalizing problems (as measured by both youth - reported and parent - reported BASC scale scores). This hypothesis was not supported, in that resulting correlations indicated no significant relations between Spirituality scores and BASC Internalizing or Externalizing scores (both parent and youth report).

Hypothesis a2 predicted that Relationship with Others scores, derived from factor analyses of youth - reported YSS items, would be significantly and negatively related to BASC Internalizing and Externalizing Scale scores (both parent and youth report). Support was found for hypothesis a2, in that youth - reported RO scores were negatively and significantly correlated with youth-reported BASC Internalizing Composite scores ( $r = -.26, p < .01$ ) and youth - reported BASC Hyperactivity/Inattention scores ( $r = -.26, p < .01$ ). Youth - reported RO scores were also negatively and significantly correlated with parent - reported BASC Internalizing Composite scores ( $r = -.19, p < .05$ ), providing partial support for this hypothesis.



Bivariate correlations were also conducted to test study hypothesis b1, that spirituality would be positively related to adaptive functioning in youth (as measured by the BASC Personal Adjustment and Adaptive Composite scales, youth and adult reports [respectively]). Results from this analysis indicated that hypothesis b1 was partially supported. Specifically, the relation between Spirituality scores and youth – reported BASC Personal Adjustment Composite scores was significant ( $r = .22, p < .05$ ). Youth - reported Spirituality scores were unrelated to parent reported adaptive functioning.

Hypothesis b2 predicted that Relationship with Others scores (youth report) would be positively and significantly related to BASC Personal Adjustment scores (youth report) and adult - reported BASC Adaptive Composite scores. This hypothesis was supported, in that Relationship with Others scores were significantly and positively related to BASC Adaptive scale scores ( $r = .16, p < .05$  for adult report and  $r = .41, p < .01$  for youth report).

Overall, no support was found for hypothesis a1, that Spirituality would be inversely related to both BASC internalizing and externalizing outcome scores. Support was found for hypothesis a2, in that RO scores correlated significantly with youth-reported BASC Internalizing and Externalizing Scale scores, and parent-reported BASC Internalizing scores. Partial support was found for hypothesis b1, that spirituality would be positively related to adaptive functioning in youth (with this relation holding true only for youth - reported Personal Adjustment scores). Finally, support was found for hypothesis b2, that RO scores would correlate significantly with BASC Personal Adjustment scores (youth report) and adult - reported BASC Adaptive Composite scores.

### **Multicollinearity Diagnostics**

Prior to indirect effect analyses, multicollinearity diagnostics were conducted. Study variables and potential mediators were entered into a multiple linear regression analysis to observe respective Variance Inflation Factor (VIF) estimates as well as Tolerance statistics. Six separate analyses were conducted, examining the predictor and intervening variables in predicting study outcome variables (BASC Adaptive, Internalizing, and Externalizing scores for both youth and parent report). Results from these analyses indicated that shared variance amongst predictor variables and intervening variables were not a significant concern within the current sample. According to Miles and Shevlin (2006), a VIF score below 2 indicates that multicollinearity is low enough to have a negligible effect on parameter estimates. These same authors recommended Tolerance scores close to 1, with .50 being an acceptable lower cutoff. All study variables evidenced VIF scores below 1.7 and Tolerance estimates above .60. Furthermore, the indirect effect macros designed by Preacher and Hayes (2012) that were utilized for subsequent analyses provide estimates for coefficients controlling for multiple variables entered within each model.

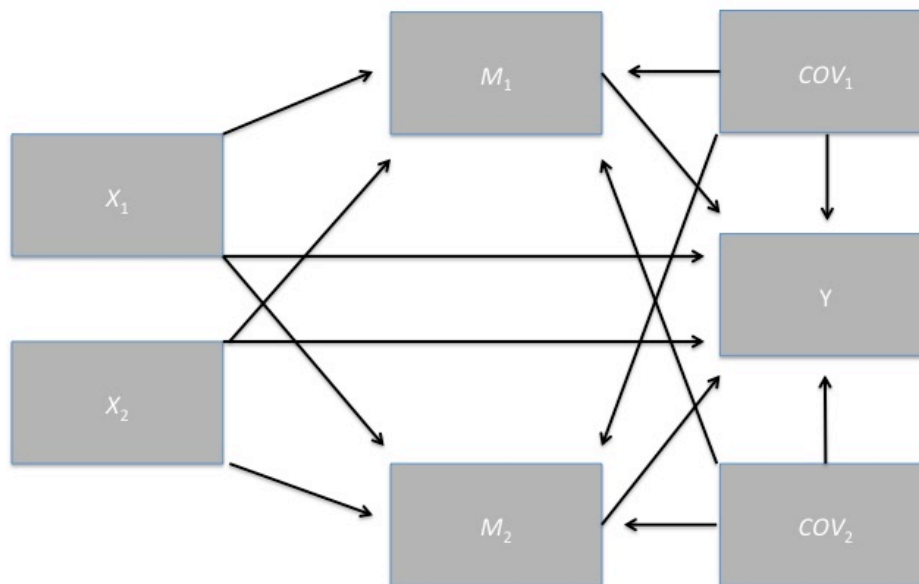
**Preliminary Analyses: Indirect Effect Models with Single Predictors (X) and Multiple Intervening Variables (Y).** Study hypotheses c and d predicted a number of significant indirect relations between predictor variables (Spirituality and RO), intervening variables (BISC and SSSC), and outcomes (parent and youth reported BASC scores). Originally, the proposed analytic strategy for the current study included tests of indirect effects utilizing the *Indirect* macro, programmed by Preacher and Hayes (2008). This macro calculates indirect effects utilizing models with single predictor variables and

multiple indirect effectors. In 2012, Preacher and Hayes developed and released a more sophisticated macro (*Mediate*), which allows for calculating indirect effect models with multiple predictors ( $X_s$ ), multiple intervening variables ( $M_s$ ), and single outcome variables ( $Y$ ). Because a superior analytic tool had become available, the previously proposed indirect effects analyses are listed in study Appendix A as preliminary results. The appendix includes a figure of the indirect effects models, a list of specific analyses conducted, associated model statistics, and brief model interpretation.

**Indirect Effect Analyses: Models with Multiple Predictors ( $X_s$ ), Multiple Intervening Variables ( $M_s$ ), and Single Outcome Variables ( $Y$ ).** According to Hayes and Preacher (2012), tests of indirect effects that include both multiple predictors and multiple intervening variables simultaneously are preferred over those including single predictors and intervening variables for a number of reasons. First, including multiple predictors and indirect intervening variables allows for comparison of whether predictors and effectors as a *set*, rather than individually, exert an effect on the relation between predictors ( $X_s$ ) and a criterion variable ( $Y$ ). Second, inclusion of multiple potential predictors and intervening variables reduces potential bias in parameter estimates due to the inclusion of additional variables that potentially impact the relation between  $X_s$  and  $Y$ . Finally, inclusion of multiple predictors and intervening variables allows for observation of specific magnitudes of indirect effects associated with each predictor and intervening variable. Preacher and Hayes also argue that this approach allows for more accurate and parsimonious tests of behavioral phenomenon when compared to traditional methods for calculating indirect effects (e.g., Baron and Kenny's test of simple mediation).

Following Hayes and Preacher's recommendations (2012), hypotheses c and d (examined individually in Appendix A [Preliminary Analyses]) were tested using six collapsed models (Models e1 through e6). These collapsed models represent simultaneous tests of c and d hypotheses, allowing for examination of the unique direct and indirect relations between variables as a set. This approach was selected due to lack of evidence for the existence of distinct proximal and distal spirituality factors observed during initial factor analyses. Furthermore, collapsed models allow for greater statistical control. These models were tested utilizing Hayes and Preacher's *MEDIATE* macro for calculating indirect effects for models with multiple predictors and multiple intervening variables (with bootstrap resampling). This macro was designed for SPSS V. 20, and allows for the inclusion of multiple predictor variables ( $Xs$ ), multiple intervening variables ( $Ms$ ), and a single outcome variable ( $Y$ ). For each analysis, a total of 5000 bootstrap samples were created, and 95% confidence intervals were generated for indirect effect estimates. Youth residential status and age were included within each of these models as covariates, as mean differences were observed for certain study variables as a function of these factors. A figure of the overall model tested for each of these analyses is provided in Figure 4. Variables included in each separate analysis, as well as associated hypotheses, are listed in Table 6.

Figure 4. Proposed Models for Tests of Indirect Effects Using Multiple Predictors ( $X_s$ ), Multiple Intervening Variables ( $M_s$ ), and Single Outcome Variable ( $Y$ )



*Table 6. Proposed Tests of Indirect Effects for Study Variables, Utilizing Multiple Predictors (Xs) and MEDIANTE Macro*

Study Hypothesis Addressed	Predictor Variables (Xs)	Proposed Intervening Variables (Ms)	Criterion Variable (Y)
e1	SPIRIT, RO	BISC, SSSC	BASC ADAPT CR
e2	SPIRIT, RO	BISC, SSSC	BASC INT CR
e3	SPIRIT, RO	BISC, SSSC	BASC INN/HYP CR
e4	SPIRIT, RO	BISC, SSSC	BASC ADAPT AR
e5	SPIRIT, RO	BISC, SSSC	BASC INT AR
e6	SPIRIT, RO	BISC, SSSC	BASC EXT AR

SPIRIT = Data-Derived Spirituality Scale (Factor 1), Child Report; RO = Data-Derived Relationship with Others Scale (Factor 2), Child Report; BISC = Behavioral Inventory of Strategic Control, Direct Action Subscale; SSSC = Social Support Scale for Children; BASC INT CR = Behavioral Assessment System for Children, Second Edition, Internalizing Composite Score, Child Report; BASC INN/HYP CR = Behavioral Assessment System for Children, Second Edition, Inattention/Hyperactivity Composite Score, Child Report; BASC PA CR = Behavioral Assessment System for Children, Second Edition, Personal Adjustment Composite Score, Child Report; BASC INT AR = Behavioral Assessment System for Children, Second Edition, Internalizing Composite Score, Adult Report; BASC EXT AR = Behavioral Assessment System for Children, Second Edition, Externalizing Composite Score, Adult Report; BASC ADAPT AR = Behavioral Assessment System for Children, Second Edition, Adaptive Composite Score, Adult Report.

### **E Hypotheses: Spirituality and Relationship with Others (RO) scores as Multiple**

#### **Predictor Variables (E1 through E3: Youth – Reported Outcomes, E4 through E6:**

#### **Adult – Reported Outcomes)**

##### **E1 - BASC Personal Adjustment (Youth Report) as the Outcome Variable.**

Hypothesis e1 predicted that BISC Scores (Coping) and SSSC scores (Social Support) would have significant and independent indirect effects on a) the relation between Spirituality ( $X_1$ ) and child reported BASC Personal Adjustment scores and b) Relationship with Others (RO;  $X_2$ ) scale scores and child reported BASC Personal Adjustment scores. Participant residential status (foster care vs. residential center) and

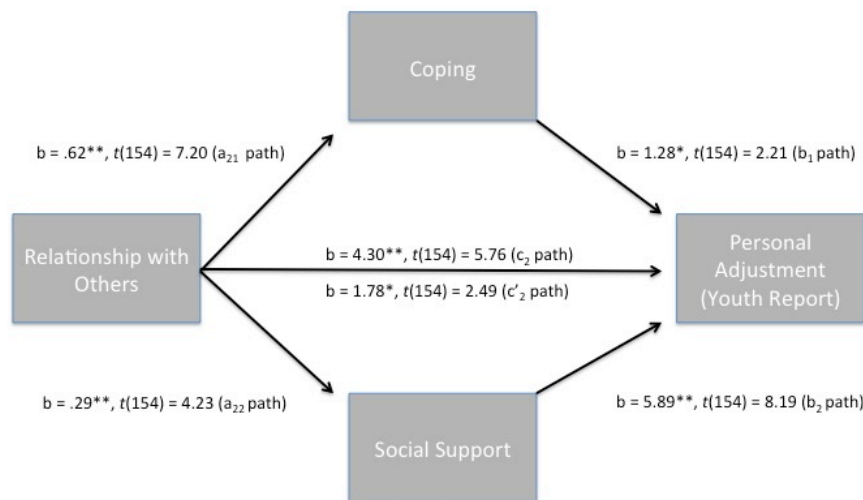
participant age (child vs. adolescent) were included as covariates within the overall model. The inclusion of these variables accounted for approximately 27% of the variance in BASC Personal Adjustment scores ( $R^2 = .27$ ,  $F [4, 154] = 14.12$ ,  $p < .001$ ; see Figure 5). No significant direct effects were found for the relation between Spirituality and BISC scores ( $a_{11}$  pathway), or for the relation between Spirituality and SSSC scores ( $a_{12}$  pathway). Furthermore, no significant direct effect was found for the relation between Spirituality and BASC Personal Adjustment scores ( $c'_1$  pathway). Because none of these relations were significant, the subsequent results focus on the effects found for RO scale scores ( $X_2$ ). Due to the fact that Spirituality ( $X_1$ ) was uncorrelated with either effector variable (BISC or SSSC), it was excluded from discussion (and representation) in subsequent models and figures.

A significant direct effect was found for the relation between RO scores and BASC Personal Adjustment scores ( $b = 1.78$ ,  $t[154] = 2.49$ ,  $p < .05$ ;  $c'_2$  pathway). Significant direct effects were found for the relation between RO scores and BISC scores ( $b = .62$ ,  $t[154] = 7.20$ ,  $p < .01$ ;  $a_{21}$  pathway) and also for the relation between RO scores and SSSC scores ( $b = .29$ ,  $t[154] = 4.23$ ,  $p < .01$ ;  $a_{22}$  pathway). Significant direct effects were also found for the relation between BISC scores and BASC Personal Adjustment scores ( $b = 1.28$ ,  $t[154] = 2.21$ ,  $p < .05$ ;  $b_1$  pathway), as well as for the relation between SSSC scores and BASC Personal Adjustment scores ( $b = 5.89$ ,  $t[154] = 8.19$ ,  $p < .01$ ;  $b_2$  pathway). Tests of indirect effects for  $a_{21}b_1$  emerged as significant (the 95% CI, .05 to 1.61 [ $SE = .39$ ], did not contain zero) indicating the presence of an indirect effect for BISC scores on the relation between RO scores and BASC Personal Adjustment. A significant indirect effect was also found for  $a_{22}b_2$ , indicating that SSSC scores

significantly affected the relation between RO scores and BASC Personal Adjustment scores (the 95% CI, .93 to 2.67 [ $SE = .44$ ], did not contain zero). Overall, the total effect of RO scores on BASC Personal Adjustment scores emerged as significant ( $b = 4.30$ ,  $t[154] = 5.76$ ,  $p < .01$ ;  $c_2$  pathway =  $c'_2 + a_{21}b_1$  pathway +  $a_{22}b_2$  pathway). Hypothesis e1 was only partially supported (spirituality not supported); but significant direct, indirect, and total effects were found for the relation between RO and BASC Personal Adjustment scores, through the BISC and SSSC. Results are depicted in Figure 5.

*Figure 5. Tests of Indirect Effects of the BISC ( $M_1$ ) and SSSC ( $M_2$ ) on the Relation Between Spirituality ( $X_1$ ), Relationship with Others ( $X_2$ ), and BASC Youth Reported Personal Adjustment Scores ( $Y$ ).*

Total Effects:  $R^2 = .27$ ,  $F(4, 154) = 14.12$ ,  $p < .001$ . 95% CI for indirect effects through Coping = .05 to 1.61 and through Social Support = .93 to 2.67. \* =  $p < .05$ , \*\* =  $p < .01$ .



## E2 - BASC Internalizing Problem Scores (Youth Report) as the Outcome

**Variable.** The previous analysis was repeated using youth reported BASC Internalizing scores as the outcome variable. The inclusion of these variables accounted for

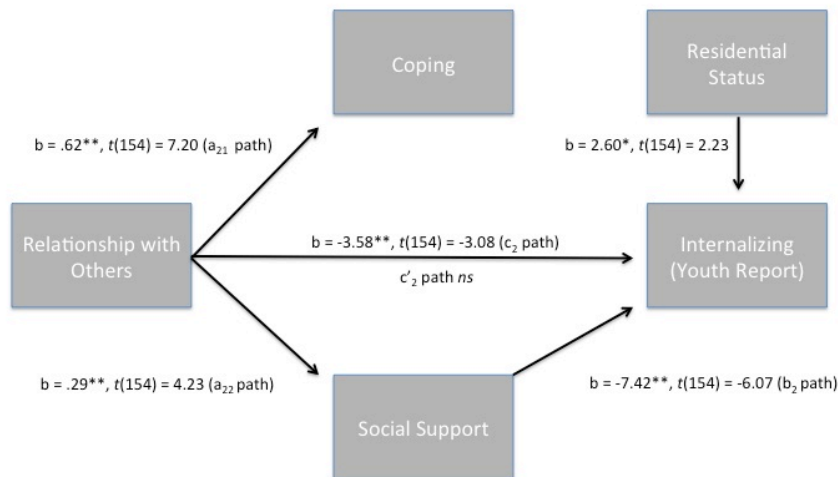


approximately 12% of the variance in BASC Internalizing scores ( $R^2 = .12$ ,  $F [4, 154] = 5.13$ ,  $p < .001$ ). Participant residential status emerged as a significant covariate within the overall model ( $b = 2.60$ ,  $t[153] = 2.23$ ,  $p < .05$ ). Because none of the relations for Spirituality ( $X_1$ ) were significant (as in the previous analysis), the subsequent results focus on the effects found for RO scale scores ( $X_2$ ).

No significant direct effect was found for the relation between RO scores and BASC Internalizing scores ( $c'_2$  pathway). Significant direct effects were found for the relation between RO scores and BISC scores ( $b = .62$ ,  $t[154] = 7.20$ ,  $p < .01$ ;  $a_{21}$  pathway) and also for the relation between RO scores and SSSC scores ( $b = .29$ ,  $t[154] = 4.23$ ,  $p < .01$ ;  $a_{22}$  pathway). While no significant direct effects were found for the relation between BISC scores and BASC Internalizing scores ( $b_1$  pathway), a significant direct effect was found for the relation between SSSC scores and BASC Internalizing scores ( $b = -7.42$ ,  $t[154] = -6.07$ ,  $p < .01$ ;  $b_2$  pathway). Although tests of indirect effects for  $a_{21}b_1$  emerged as nonsignificant, a significant indirect effect was found for  $a_{22}b_2$ , indicating that SSSC scores affected the relation between RO scores and BASC Internalizing scores (the 95% CI, -3.47 to -1.06 [ $SE = .61$ ], did not contain zero). Overall, the total effect of RO scores on BASC Internalizing scores emerged as significant ( $b = -3.58$ ,  $t[154] = -3.08$ ,  $p < .01$ ;  $c_2$  pathway =  $c'_2 + a_{21}b_1$  pathway +  $a_{22}b_2$  pathway). Hypothesis e2 was only partially supported; SSSC scores significantly affected the relation between RO and BASC Internalizing scores. Results are depicted in Figure 6.

*Figure 6. Tests of Indirect Effects of the BISC ( $M_1$ ) and SSSC ( $M_2$ ) on the Relation Between Spirituality ( $X_1$ ), Relationship with Others ( $X_2$ ), and BASC Youth Reported Internalizing Scores ( $Y$ ).*

Total Effects:  $R^2 = .12$ ,  $F(4, 154) = 5.13$ ,  $p < .001$ . 95% CI for indirect effects through Coping ns, and through Social Support = -3.47 to -1.06. \* =  $p < .05$ , \*\* =  $p < .01$ .



### E3 - BASC Inattention/Hyperactivity Scores (Youth Report) as the Outcome

**Variable.** The previous analysis was repeated using youth reported BASC Inattention/Hyperactivity scores as the outcome variable. The inclusion of these variables accounted for approximately 8% of the variance in BASC Inattention/Hyperactivity scores ( $R^2 = .08$ ,  $F[4, 154] = 3.37$ ,  $p < .05$ ). Because none of the relations for Spirituality ( $X_1$ ) were significant (as in the previous analyses), the subsequent results focus on the effects found for RO scale scores ( $X_2$ ).

No significant direct effect was found for the relation between RO scores and BASC Inattention/Hyperactivity scores ( $c'_2$  pathway). Significant direct effects were found for the relation between RO scores and BISC scores ( $b = .62$ ,  $t[154] = 7.20$ ,

$p < .01$ ;  $a_{21}$  pathway) and also for the relation between RO scores and SSSC scores ( $b = .29$ ,  $t[154] = 4.23$ ,  $p < .01$ ;  $a_{22}$  pathway). However, no significant direct effects were found for the relation between BISC scores and BASC Inattention/Hyperactivity scores ( $b_1$  pathway), or for the direct relation between SSSC scores and BASC Inattention/Hyperactivity scores ( $b_2$  pathway). Tests of indirect effects for  $a_{21}b_1$  and  $a_{22}b_2$  emerged as nonsignificant, indicating the absence of indirect effects for both BISC and SSSC scores on the relation between RO scores and BASC Inattention/Hyperactivity scores. Overall, the effect of RO scores and intervening variables on BASC Inattention/Hyperactivity scores emerged as significant ( $b = -3.76$ ,  $t[154] = -2.79$ ,  $p < .01$ ;  $c_2$  pathway =  $c'_2 + a_{21}b_1$  pathway +  $a_{22}b_2$  pathway). However, hypothesis e3 was not supported; neither BISC nor SSSC scores produced significant indirect effects on the relation between RO scores and BASC Inattention/Hyperactivity scores.

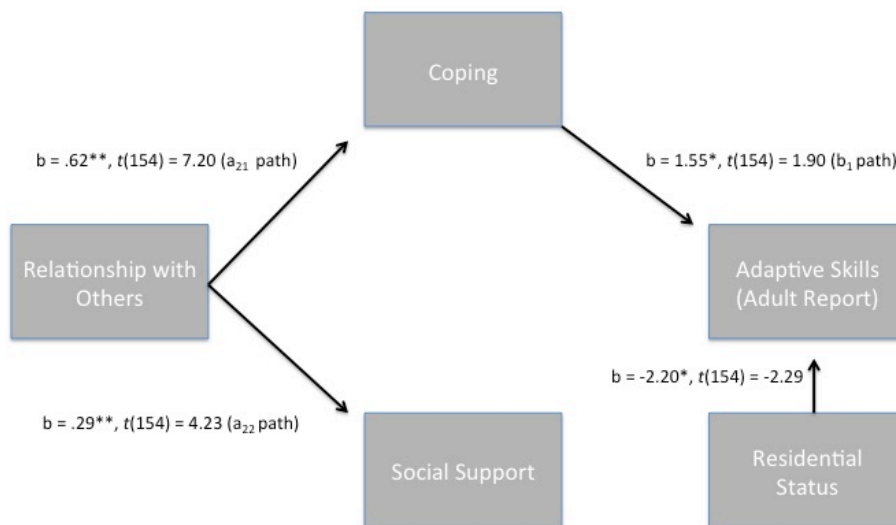
**E4 - BASC Adaptive Scores (Adult Report) as the Outcome Variable.** The previous analysis was repeated using adult reported BASC Adaptive scores as the outcome variable. The inclusion of these variables accounted for approximately 6% of the variance in BASC Adaptive scores ( $R^2 = .06$ ,  $F [4, 154] = 2.55$ ,  $p < .05$ ). Participant residential status emerged as a significant covariate within the overall model ( $b = -2.20$ ,  $t[153] = -2.29$ ,  $p < .05$ ). Because none of the relations for Spirituality ( $X_1$ ) were significant (as in the previous analyses), the subsequent results focus on the effects found for RO scale scores ( $X_2$ ).

No significant direct effect was found for the relation between RO scores and BASC Adaptive scores ( $c'_2$  pathway). Significant direct effects were found for the relation between RO scores and BISC scores ( $b = .62$ ,  $t[154] = 7.20$ ,  $p < .01$ ;

$a_{21}$  pathway) and also for the relation between RO scores and SSSC scores ( $b = .29$ ,  $t[154] = 4.23$ ,  $p < .01$ ;  $a_{22}$  pathway). A significant direct effect was found for the relation between BISC scores and BASC Adaptive scores ( $b = 1.55$ ,  $t[154] = 1.90$ ,  $p < .05$ ;  $b_1$  pathway). However, no significant effect was found for the direct relation between SSSC scores and BASC Adaptive scores ( $b_2$  pathway). Tests of indirect effects for  $a_{21}b_1$  emerged as significant, indicating the presence of an indirect effect for BISC scores on the relation between RO scores and BASC Adaptive scores (the 95% CI, .017 to 2.16 [ $SE = .53$ ], did not contain zero). Tests of indirect effects for  $a_{22}b_2$  emerged as nonsignificant, indicating an absence of indirect effects of SSSC score on the relation between RO scores and BASC Adaptive scores. Overall, the total effect of RO scores and intervening variables on BASC Adaptive scores emerged as nonsignificant ( $c_2$  pathway =  $c'_2 + a_{21}b_1$  pathway +  $a_{22}b_2$  pathway). Hypothesis e4 was only partially supported; BISC scores significantly affected the relation between RO scores and BASC Adaptive scores. Results are depicted in Figure 7.

*Figure 7. Tests of Indirect Effects of the BISC ( $M_1$ ) and SSSC ( $M_2$ ) on the Relation Between Spirituality ( $X_1$ ), Relationship with Others ( $X_2$ ), and BASC Adult Reported Adaptive Skill Scores ( $Y$ ).*

Total Effects:  $R^2 = .06$ ,  $F(4, 154) = 2.55$ ,  $p < .05$ . 95% CI for indirect effects through Coping = .017 to 2.16, and through Social Support = ns. \* =  $p < .05$ , \*\* =  $p < .01$ .



**E5 - BASC Internalizing Scores (Adult Report) as the Outcome Variable.** The previous analysis was repeated using adult reported BASC Internalizing scores as the outcome variable. The inclusion of these variables accounted for approximately 7% of the variance in BASC Internalizing scores ( $R^2 = .07$ ,  $F[4, 154] = 2.87$ ,  $p < .05$ ). Participant residential status emerged as a significant covariate within the overall model ( $b = 4.31$ ,  $t[153] = 2.28$ ,  $p < .05$ ). Because none of the relations for Spirituality ( $X_1$ ) were significant (as in the previous analyses), the subsequent results focus on the effects found for RO scale scores ( $X_2$ ).

No significant direct effect was found for the relation between RO scores and BASC Internalizing scores ( $c'_2$  pathway). Significant direct effects were found for the relation between RO scores and BISC scores ( $b = .62$ ,  $t[154] = 7.20$ ,  $p < .01$ ;  $a_{21}$  pathway) and also for the relation between RO scores and SSSC scores ( $b = .29$ ,  $t[154] = 4.23$ ,  $p < .01$ ;  $a_{22}$  pathway). Furthermore, no significant direct effects were found for the relation between BISC scores and BASC Internalizing scores ( $b_1$  pathway), or for the direct relation between SSSC scores and BASC Internalizing scores ( $b_2$  pathway). Tests of indirect effects for  $a_{21}b_1$  and  $a_{22}b_2$  emerged as nonsignificant, indicating the absence of an indirect effect for both BISC and SSSC scores on the relation between RO scores and BASC Internalizing scores. Overall, the effect of RO scores and indirect effects on BASC Internalizing scores emerged as significant ( $b = -3.94$ ,  $t[154] = -2.34$ ,  $p < .05$ ;  $c_2$  pathway =  $c'_2 + a_{21}b_1$  pathway +  $a_{22}b_2$  pathway). However, hypothesis e5 was not supported; neither BISC nor SSSC scores produced significant indirect effects on the relation between RO scores and BASC Internalizing scores.

#### **E6 - BASC Externalizing Scores (Adult Report) as the Outcome Variable.**

The previous analysis was repeated using adult reported BASC Externalizing scores as the outcome variable. The inclusion of these variables accounted for approximately 5% of the variance in BASC Externalizing scores ( $R^2 = .05$ ,  $F[4, 154] = 2.18$ ,  $p$  ns).

Participant residential status emerged as a significant covariate within the overall model ( $b = 3.64$ ,  $t[153] = 2.26$ ,  $p < .05$ ). Because none of the relations for Spirituality ( $X_1$ ) were significant (as in the previous analyses), the subsequent results focus on the effects found for RO scale scores ( $X_2$ ).

No significant direct effect was found for the relation between RO scores and BASC Externalizing scores ( $c'_2$  pathway). Significant direct effects were found for the relation between RO scores and BISC scores ( $b = .62, t[154] = 7.20, p < .01; a_{21}$  pathway) and also for the relation between RO scores and SSSC scores ( $b = .29, t[154] = 4.23, p < .01; a_{22}$  pathway). No significant direct effects were found for the relation between BISC scores and BASC Externalizing scores ( $b_1$  pathway), or for the direct relation between SSSC scores and BASC Externalizing scores ( $b_2$  pathway). Tests of indirect effects for  $a_{21}b_1$  and for  $a_{22}b_2$  emerged as nonsignificant, indicating the absence of an indirect effect for both BISC and SSSC scores on the relation between RO scores and BASC Externalizing scores. Overall, the total effect of RO scores and indirect effects on BASC Externalizing scores emerged as nonsignificant ( $c_2$  pathway =  $c'_2 + a_{21}b_1$  pathway +  $a_{22}b_2$  pathway). Hypothesis E6 was not supported; neither BISC nor SSSC scores produced significant indirect effects on the relation between RO scores and BASC Externalizing scores.

Overall, partial support was found for hypotheses e1 and e2. Relations hypothesized between spirituality, intervening variables, and youth outcomes were not significant in any of the models tested; however, results indicated significant indirect relations between RO scores and youth-reported BASC adaptive outcomes (e1) and BASC internalizing problems (e2), occurring through SSSC scores. Additionally, significant direct and indirect relations were found to exist between RO and youth-reported BASC adaptive scores, occurring through BISC scores (e1). Finally, BISC scores evidenced significant indirect effects on the relation between RO scores and adult-reported adaptive behavior; however, the total effects of these variables on outcomes

were nonsignificant, ultimately refuting hypothesis e4. Hypotheses e3, e5, and e6 were not supported.

### **Discussion**

Youth in foster care appear to carry a disproportionate risk for negative mental health outcomes when compared to typical youth (Oswald et al., 2010; Tomalski & Johnson, 2010). Although preliminary studies (Dowling et al., 2004; Kim et al., 2008) have suggested that spirituality carries potential protective benefits in terms of mental health outcomes for these youth, few have directly examined the mechanisms by which spiritual beliefs and practices impart benefit (Crawford et al., 2006). The current study adds to the field by examining how two mechanisms, coping and perceived social support, potentially affect the relation between spirituality and outcomes (both adaptive and maladaptive) in foster youth. The present study found support for previous findings, and also raises new questions for the potential ways in which spirituality might operate to impact the emotional and behavioral functioning of youth in care.

#### **Addressing Construct Clarity: Findings from Factor Analyses**

Following Pargament et al.'s (2001) and Cotton et al.'s (2006) theoretical conceptualizations of spirituality, the current study used a data-driven approach to examine whether *proximal or internal* (e.g., beliefs, personal convictions, and internal aspects) and *distal or observable* (e.g., church attendance, and prayer) aspects of spirituality exist as two separate and identifiable constructs. Miller and Thoresen (2003) noted that, “*spirituality* as a term tends to elude tight operational definition,” and these researchers pointed to “substantial construct overlap between other commonly studied phenomenon, such as religiosity, well-being, and love” (p. 27). While supporting



previous notions that the construct of spirituality is likely multidimensional, results from the current study suggest that the specific dimensions differ from those conceptualized in previous research (Cotton et al., 2006; Pargament, 2001).

Contrary to previous conceptualizations, the results from the current study suggest that the construct of spiritual phenomenon for foster youth also includes social relationships as an important factor in spiritual beliefs. To date, previous studies have not found evidence for the existence of this social factor. Findings from the current study support the notion that social relationships, rather than the performance of religious behaviors (e.g., prayer and performance of rituals), may be an important component of the spirituality framework originally overlooked by Pargament (2001) and Cotton et al. (2006).

The findings can be interpreted in numerous ways. First, it may be that the *proximal/distal* conceptualization, viewed as discrete dimensions, is not an accurate model of spiritual beliefs for youth exposed to maltreatment. Proponents of this view state that, “Drawing the distinction between the two, although intellectually stimulating, may be difficult at best when working with children for whom the boundaries are blurred in actual clinical practice” (Sexson, 2004, p. 37). Support for this argument comes from the *Stages of Faith* model, developed over a number of years and through a body of research conducted by Fowler and colleagues (2006). Fowler’s stage theory posits that youth spirituality develops over the course of stages mirroring cognitive, emotional, and social development. According to this model, the distinction between internal (proximal) and internal (observable) facets of spiritual beliefs for youth occurs only at a later, more mature stage of development along the continuum, assuming typical development in a

number of other key areas (2006). Research has pointed to the notion that maltreatment can substantially disrupt youth functioning across a number of domains including cognitively, socially, emotionally, and even physically (Rogosch, Dackis, & Cicchetti, 2011; Stornach et al., 2011). Thus, the *proximal/distal* distinction proposed by Cotton et al. (2006) and Pargament (2001) may apply more readily to youth who have developed in typical contexts, without experiencing events such as maltreatment that can substantially impact the developmental trajectory of youth. For example, Rogosch, Dackis, and Cicchetti (2011) noted that youth exposed to maltreatment often evidence poorer internal representations of relationships and poorer quality of attachments than typical youth, given inconsistent responses from their early caregivers and unpredictable environments. Because of their increased risk for delays in social and emotional development, it is likely that theories of spirituality based on typical youth may not correspond accurately to spiritual development in youth with maltreatment experiences.

Additionally, the current study provided evidence for the existence of a relational factor operating alongside spirituality for youth exposed to maltreatment. Early systematic research within the field of youth spirituality has been largely basic in nature, rather than applied (Roehlkepartain et al., 2006). Specifically, previous studies have attempted to isolate and examine spiritual thoughts and content to more fully understand *what* constitutes spiritual thoughts and beliefs (basic, structural approach). Only recently have researchers (specifically from the Western perspective) began to understand that spiritual beliefs contain functional utility for youth, and are likely intertwined with various other domains of functioning and development (applied, functional approach). For instance, Granqvist and Dickie (2006) maintained that spirituality creates a

relationship with a powerful and ever-present figure. Rogosch et al. (2011) highlighted that youth exposed to maltreatment often evidence difficulties with object-relations and social functioning as a result of neglect and abuse experiences. Although not directly tested in the present study, for youth exposed to maltreatment, spirituality and a relationship with a higher power may provide templates for future relationships, foster prosocial competencies, and build positive expectations for social interactions. A review of items from the relational factor found in the current study provides evidence for the notion that a relationship with a higher power can serve as an example or a realm within which to practice the maintenance of social relationships. The current study provides support for the existence of distinct spiritual and relational constructs for youth exposed to maltreatment. Furthermore, this finding demonstrates that, rather than representing a strictly internal phenomenon for youth exposed to maltreatment, spirituality may be related to functional behaviors for these youth (i.e., social relating).

### **Spirituality and Relations with Others: Effects on Internalizing Outcomes.**

Initial hypotheses (a, c2, and d2) and collapsed-model hypotheses (e2 and e5) predicted significant relations between youth-reported spirituality scores and internalizing outcomes. These hypotheses were only partially supported, in that relationship with others (and not spirituality) was predictive of internalizing symptoms. The results differ from previous research (Cotton et al., 2006; Hodge et al., 2001), which have noted that spirituality significantly impacts internalizing functioning in youth. For example, Kim (2008) found that importance of faith provided significant protective effects against internalizing symptoms, at least for girls exposed to maltreatment. The idea that internalizing functioning can be affected by spirituality makes intuitive sense, given that

both processes are thought to occur within the individual and are affected by internal belief structures. For instance, Dew et al. (2010) noted that the utilization of negative religious coping, characterized by a belief that God or a Higher Power is punitive and that adverse events happen as part of divine mandate, could relate to hopelessness and depressive cognitive styles. Thus, negative religious views and depressive symptoms could be part of the same underlying lens with which certain youth see the world, in that these youth tend to view numerous events as consistently negative and unchangeable.

Null findings in the relation between spirituality and internalizing outcomes obtained in the current study can be explained in a number of ways. First, it is possible that how youth apply spiritual beliefs to understanding maltreatment experiences, rather than the specific spiritual beliefs they hold, ultimately relate to internalizing symptoms. For instance, the current study asked youth about their endorsement of spiritual beliefs, but did not ask youth about these beliefs in relation to specific life events (i.e., maltreatment experiences), or how these beliefs might influence their subsequent future expectations. It is possible that the *ways* in which spiritual beliefs affect their explanations for events and their expectations for future events, rather than their general endorsements of spiritual beliefs, are the active determinants in predicting internalizing symptoms. For example, Warner, Mahoney, and Krumrei (2009) found that, among a sample of typical youth, level of religiosity was not the factor in determining adjustment in youth following psychosocial stress (i.e., divorce). Rather, it was the application of a specific type of religious explanation for the event (i.e., viewing the event as a “divine” punishment and thus unchangeable) that led to subsequent depressive and anxious symptoms. Because the current study did not examine whether spiritual explanations

were used by youth to explain their maltreatment experiences or how these beliefs might affect expectations for future events, it is difficult to determine how spirituality might operate with other explanatory processes and attempts at making meaning of maltreatment experiences for youth in the current study.

Second, the measure of internalizing was a broadband scale, including both anxious and depressive symptoms. While the two are shown to overlap theoretically and symptomatically (see Tripartite Model of Depression, [Clark & Watson, 1991]), it is possible that the use of a conglomerate scale is inadequate to detect spirituality's potential effect on specific internalizing clusters (anxiety vs. depression symptoms). The use of scales with greater symptoms specificity (potentially aggregated at the subscale level) could demonstrate greater sensitivity to the effects of spirituality on various internalizing conditions, and could differentiate between the manner in which spirituality may affect both anxiety and depressive symptoms differentially. For instance, Dew et al. (2010) found that religiosity specifically impacted depressive symptoms in a sample of inpatient youth. While a growing body of evidence exists supporting the relation between negative religious coping and its impact on depressive symptomatology in children, far fewer studies and less support exists for the notion that religious and spiritual beliefs affect internalizing symptoms as a whole (Dew et al., 2010; Van Dyke et al., 2009). Thus, it is possible that the omnibus measure utilized in the current study lacks the specificity necessary to replicate past findings in youth exposed to maltreatment.

Another potential reason for an absence of observed effects for spirituality on internalizing symptoms within the current study is that measures were obtained for a single time point only. Dew et al. (2010) found that changes in youth spirituality over

time were an important predictor of worsening depressive symptoms in psychiatric inpatient youth. Because longitudinal changes in spirituality over time were not measured in the current study, it is possible that results obtained represent an incomplete picture of the interplay between youth spirituality and internalizing symptoms.

An important and unique finding from the current study was that youths' relationship with others affected internalizing behaviors, and also that social support exerted significant indirect effects on this relation. This finding is also supported by previous research, in that various dimensions of social support have been found to predict youth depressive behaviors even above and beyond the effects of spirituality and religious functioning (Dew et al., 2010). However, findings from the current study expand previous research by suggesting that both relating to others in socially cohesive ways (i.e. relationships with others) and endorsing strong perceptions of social support relate to lower internalizing symptoms for these youth. This finding provides evidence that both internal factors (i.e., youth perceptions of support) and external behaviors (e.g., forgiving others, being thankful, and following rules) can affect functioning for maltreated youth; it also underscores the overall importance that positive relationships (as well as facility in utilizing skills necessary for their maintenance) can have in ameliorating the negative impact of maltreatment experiences for youth in care. Stronach et al. (2011) provided evidence for the notion that maltreated youth exhibit poorer attachment quality and more negative representations of relationships than their non-maltreated counterparts. Other lines of research have demonstrated that maltreated youth demonstrate poorer social functioning compared to youth without maltreatment histories (Alink et al., 2012; Teisl et al., 2012). Although tested only for a limited set of relational

factors within the current study, findings preliminarily suggest (alongside other studies) that understanding and addressing social factors (e.g., perceptions, behaviors, and representations) might be particularly salient in altering the negative developmental effects of maltreatment experiences on internalizing outcomes.

### **Spirituality and Relations with Others: Effects on Externalizing Outcomes.**

Initial hypotheses (a, c3, and d3) and collapsed-model hypotheses (e3 and e6) predicted significant relations between youth-reported spirituality and externalizing outcomes. However, results obtained were in the opposite expected direction, and contrary to a body of literature that has found significant effects for spirituality on externalizing behaviors (Hodge et al., 2001). For instance, Smith (2003) summarized a number of studies demonstrating associations of religion and spirituality with lower substance use and delinquency in adolescents. However, all of these studies were conducted with typical youth, and the generalizability of those results to youth in foster care is unclear. The current study sought to test these relations for youth in foster care, presenting an important contribution to the research literature given the higher risk of foster youth for delinquent behavior compared to typical youth (Courtney et al., 2001).

At least one study that has been conducted with maltreated youth has produced findings similar to the current study. Results from a study by Kim (2008) suggested that, while spirituality may carry protective benefits for non-maltreated youth, these effects did not significantly impact externalizing problems in youth exposed to maltreatment. However, unlike the current study, Kim relied on church attendance as a proxy for spirituality, likely overlooking the importance of internal facets of spirituality. The present study included potential internal components (such as strength of beliefs),

perhaps adding support for the conclusion that, similar to Kim's study, there is a nonsignificant relation between spirituality and externalizing behavior for youth with maltreatment histories. These results suggest, first and foremost, that caution should be used in extrapolating findings from spirituality research conducted on samples of typical youth to those in foster care. Second, these findings provide support for the existence of multiple potential pathways by which youth exposed to maltreatment and other youth arrive at similar outcomes; specifically, results suggest that spirituality might not provide protective benefits to all youth, at least not by the mechanisms examined within the current study or with externalizing behaviors considered as an outcome. Finally, these results suggest that the spiritual beliefs held by foster youth may not translate as clearly and directly to behavioral outcomes as presented in previous literature, and that further exploration of intervening mechanisms is warranted.

While neither spirituality nor relationships with others produced noteworthy effects on youth externalizing behaviors, coping and social support were significantly associated with these behaviors. Although this finding is not unusual in studies of typical youth, the current study adds to the literature by showing this relation for youth exposed to maltreatment. For instance, previous studies have suggested that both coping and social support provide protective benefits for typical youth, relating to lower levels of externalizing behaviors. Grant et al. (2006) reviewed a wide body of literature highlighting the numerous cognitive variables, including coping, that can impact myriad behavioral outcomes for typical youth. These authors note that, for typical youth, coping and stress likely interact to influence additional cognitive characteristics (such as attribution and appraisals) that affect how youth manage stressors. Additionally, research



exists supporting the links between parental support and teacher support with lower levels of drug and alcohol use, fewer displays of antisocial behavior, and fewer conduct problems in typical youth (see Benhorin & McMahon, 2008 for a review).

While these studies have provided evidence for the positive effects of coping and social support for typical youth, far less research has been conducted examining the impact of these variables for maltreated youth on problem behaviors. While evidence exists that coping and social support provide protective benefits for youth exposed to both community violence and familial violence (Brady et al., 2008; Owen et al., 2008), the current study suggests that these relations also hold true for maltreated youth.

One potential explanation for this findings is that youth exposed to maltreatment, similar to youth who have experienced other types of violence, have experienced a number of stressful life events that impact both *how* they understand maltreatment events (attributions) and *what* they expect to happen as a result of their experiences (appraisals for future events). For maltreated youth, coping can provide a means of exerting control or influence over maltreatment experiences, while social support can provide a context of resources from which to draw both instrumental and emotional support in response to the stress resulting from maltreatment experiences. Because externalizing problems are more likely within maltreated youth compared to non-maltreated youth, it is particularly important to understand the roles that both intrapersonal (coping) and interpersonal (social support) factors play in impacting behavioral outcomes for these youth.

**Spirituality and Relations with Others: Effects on Adaptive Outcomes.** Few prior studies have examined relations between spirituality and adaptive outcomes in youth. Dowling et al. (2004) found positive effects for spirituality on adaptive behavior in

non-maltreated youth, providing preliminary evidence that spirituality may affect positive behavioral outcomes. King and Furrow (2004) produced similar findings, in that non-maltreated youth who reported higher participation in spiritual activities and engagement in spiritual practice demonstrated higher empathy and greater moral understanding than their counterparts who endorsed lower levels of spirituality. The current study attempted to expand previous findings by examining whether these relations also hold true for youth in foster care. As a caveat, it is important to reiterate that although youth in foster care do not represent all maltreated youth, their inclusion in systematic and empirical research represents an important first step in accessing an understudied group of youth at-risk for negative outcomes.

Findings from the current study are consistent with the aforementioned studies, in that, at least for initial hypotheses and preliminary tests, significant relations were found between spirituality and youth-reported adaptive functioning (Hypotheses b1 and c1). However, contrary to previous research, the effects of spirituality emerged as nonsignificant in the final, collapsed-model tests (Hypotheses e1, and e4). Rather than finding robust effects for spirituality, one unexpected finding was that youth – reported relationships with others were strongly related to adaptive outcomes (Hypotheses b2, d1, e1, and e4). In fact, compared with spirituality in the collapsed-model tests, results suggest that relationship with others accounted for a greater portion of the variance in adaptive outcomes than spirituality in youth exposed to maltreatment. Furthermore, relations with others impacted adaptive behavior through a number of significant pathways (directly and indirectly through both coping and social support). This finding was unique, suggesting that relationships with others affect not only perceptions of social

support for youth exposed to maltreatment, but also their level of individual coping in response to stressors they might experience. One interpretation for this finding is that youths' reports of their positive relationships with others relates to their perception of resources available to cope with extant stressors in their lives. This interpretation is consistent with Zielinski and Bradshaw's risk/protective factor model, in that both individual (coping) and contextual factors (social support) can affect youth outcomes (2006). The current study adds to a growing body of literature supporting the notion that factors contributing to adaptive behavioral functioning in typical youth (coping and social support) also provide protective benefit to youth exposed to maltreatment.

Previous research conducted by Compas, Connor-Smith, Saltzman, Thornsen, and Wadsworth (2001) has suggested that coping is important in its own right in affecting youth emotional and behavioral functioning, and the current results suggest that youth relationships with others relate to coping. The authors also concluded that youths' relationships with others are associated with their perceptions of how others see them socially. Benhorin and McMahon (2008) found that perceived social support and social functioning operated as protective factor for youth exposed to violence, a finding that was supported in the current sample of maltreated youth.

King and Furrow (2004) suggested that viewing and participating in trusting, empathic, and supportive interactions with others (which the authors called *social capital*) was related to a more highly developed sense of morality compared to youth who did not endorse these views of and experiences with positive relationships. In this regard, the results of the current study are supported by an established body of research highlighting the connection between positive views of relating to others, the performance

of behaviors building social cohesion, and positive youth outcomes. Consistent with findings by Crawford, Wright, and Masten (2006) and King and Benson (2006), it is possible that performance of these socially cohesive practices, association with peers and adults who value social cohesion, and experiencing supportive and empathic networks (as well as positive role models) are all benefits of spiritual practice that ultimately promote adaptive functioning in maltreated youth.

For example, Anthony and Zimmerman (2007) noted that maltreated youth often demonstrate a range of antisocial activity (i.e. aggressive behaviors) that likely impact social functioning. Given that social cohesion and harmony are fundamental tenets of a number of spiritual and religious belief systems, it is possible that participation with prosocial peers and models in the religious context might impact aggressive behavioral tendencies. The current study provided evidence for two pathways through which youths' relationships with others impact positive adaptive functioning, specifically through coping skills and through perceptions of social support. These findings demonstrate that, rather than spiritual beliefs having importance in impacting outcomes, the application of beliefs within the context of social relationships are a key factor affecting functioning for maltreated youth. Regardless of the active mechanisms whereby effects are transmitted, and given that improvement of emotional and behavioral health should focus not only on decreasing pathology but also on improving strengths, the current study contributes to the field by providing support for the idea that spirituality and relationships with others can provide protective benefits for the adaptive functioning of maltreated youth.

## **Limitations and Future Directions**

Results obtained from the current study should be interpreted in light of certain limitations. First, the research design and statistical methods employed in the current study were correlational; causality between predictors and criterion variables cannot be assumed without first establishing temporality, which is the occurrence of one variable predicting significant change in another variable over time. Without inclusion of multiple time points, predictions about the direction and cause of effects obtained in the current results are not possible. Second, interpretations of the current results may be limited by lack of a comparison group of typical youth. Inclusion of a control group of age, gender, and ethnically matched children would provide stronger evidence that the observed results were specific to youth in foster care or generalizable to all youth.

For example, Kim (2008) provided evidence for the notion that the protective effects of spirituality may have a particularly strong impact on youth exposed to maltreatment; Kim's study allowed comparison of effects from samples of both maltreated and non-maltreated children. Such study designs allow for greater power of inference in detecting the potential impact of spirituality as it differentially affects both groups of youth.

Third, the obtained subsample of youth from residential centers evidenced higher levels of pathology and lower adaptive skills, according to both youth and adult reports, than those from foster homes. Residential placement is typically reserved for youth with either severe emotional disturbances or who are thought to require a more intensive level of intervention compared to youth who could function adequately in a non-residential placement (Lyons, Libman-Mintzer, Kisiel, & Shallcross, 1998). The fact that residential

status emerged as a significant covariate across a number of models tested suggests that future researchers should account for potential sources of variation in symptoms in studies on youth in alternative care. Moreover, when behavioral outcome is a part of the research question, the current results suggest caution in the interpretation of other research findings when methods for recruiting participants or youth status (foster vs. residential) are not explicitly stated. Aside from the need to conduct further research with youth in care, it is also important to consider that these youth may also differ from populations of youth who have been exposed to maltreatment in general. Finally, data collection for the current study was conducted using a novel approach, the A-CASI. It is unclear at this time how method variance could have impacted the obtained results, and how closely responses obtained from the A-CASI compare to instrument administration conducted using traditional pencil and paper methods.

Notwithstanding these limitations, the current study contributed to the advancement of the study of spirituality and youth in a number of ways. First, the current study was one of the first to empirically examine the construct of spirituality for youth utilizing a data-driven approach. Such an approach, in contrast to previous studies that have utilized one or few indicators, allows for a broader understanding of the complex construct of spirituality as both an interpersonal and intrapersonal phenomenon for youth.

Second, the current study provided a systematic investigation of these constructs for youth in foster care exposed to maltreatment, extending the applications of previous theories to a group of at-risk youth. This research allows tests of extant theories to examine their generalizability to select populations at risk for negative outcomes, such as youth in care. Third, the current study contributed to the literature by further illuminating

how the ways in which these youth cope with their experiences and how they perceive social relationships can ultimately affect both positive and negative mental health outcomes, despite maltreatment experiences. Evidence was found for the notion that social factors (e.g., relationships with others and social support) are important to the adaptive functioning of maltreated youth. Additionally, coping skills and perceptions of social support were found to influence the relations between spiritual/religious factors and youth outcomes, setting the stage for study of additional cognitive and social mechanisms that may work to influence these relations. Finally, and perhaps most importantly, the current study demonstrated that these factors affect adaptive functioning in youth, prompting additional consideration of how beliefs and youths' social resources could be useful in understanding positive outcomes for youth exposed to maltreatment.

The current research study provided evidence that spirituality (albeit to a lesser extent) and relationships with others relate to mental health outcomes for at-risk youth exposed to maltreatment. Commensurate with the American Psychological Association's push toward cultural competence in clinical practice, it is important for competent clinicians to demonstrate facility with the incorporation of client belief systems and strength-based practices into treatment. One example of this is in a recent article by Walker, Reese, Hughes, and Troskie (2010), which provides practical steps for incorporation of client spirituality and religiosity in an evidence-based treatment. These authors provided examples of how spiritual practices (prayer, meditation, and rituals) can be incorporated as an adjunct to treatment to improve treatment gains in youth exposed to trauma. It will also be important for clinicians to understand how spiritual beliefs might impede the treatment progress, and how these spiritual beliefs (i.e., tendencies toward

negative religious coping) may be sensitively and effectively addressed during therapy. Such an approach demonstrates cultural competency, respect for the belief systems of the client, and sensitivity to the worldview of the client.

The current study raised a number of additional areas for future inquiry. First, further examination of how foster youth utilize spiritual beliefs to manage acute stressors and practical adversities of day-to-day living (i.e., changing foster homes) could provide insight into internal processes used by youth to make meaning of their experiences. For instance, it is possible that additional cognitive processes are important in the spirituality/outcome relation, such as cognitive appraisals for events, attributions, and expectations that youth have regarding future experiences. Disentangling these cognitive processes by examining their unique contributions in affecting mental health outcomes could provide clarity to how spirituality ultimately impacts at-risk youth. Second, more research is needed to clarify which aspects of social support ultimately affect the relation between spirituality and mental health outcomes. It is possible that the quantity of support (i.e., number of caregivers), the quality of support (i.e., existence of invested and available caregivers), the stability of support (i.e., existence of long-term, dependable relationships), and the source of support (e.g., teachers, peers, and parents) can impact the relation between spirituality and youth outcomes. Third, the notion that intense and prolonged stress can override potential protective benefits of spiritual functioning in maltreated youth warrants further consideration and empirical examination (Kim, 2008). Finally, it is important to systematically study whether any of the above relations, including those tested in the current study, are impacted by various dimensions inherent to maltreatment experiences, including type, frequency, chronicity, and severity of abuse.



### References

- Achenbach, T. M., & Rescorla, L. A. (2004). The Achenbach System of Empirically Based Assessment (ASEBA) for ages 1.5 to 18 years. In M. E. Maruish (Ed.) *The use of psychological testing for treatment planning and outcomes assessment: Volume 2: Instruments for children and adolescents (3<sup>rd</sup> ed.)* (pp. 179 – 213). Mahwah, NJ: Lawrence Erlbaum Associates Publishers.
- Adoption and Foster Care Analysis and Reporting System. (2009). *Foster care FY 2008 estimates, as of 2009: Exits, entries, and numbers of children in care on the last day of each federal fiscal year* [On-line]. Retrieved July 20, 2010 from [http://www.acf.hhs.gov/programs/cb/stats\\_research/afcars/tar/report16.htm](http://www.acf.hhs.gov/programs/cb/stats_research/afcars/tar/report16.htm)
- Alink, L. R. A., Cicchetti, D., Jungmeen, K., & Rogosch, F. A. (2012). Longitudinal associations among child maltreatment, social functioning, and cortisol regulation. *Developmental Psychology*, 48(1), 224-236. doi: 10.1037/a0024892
- Anthonyamy, A., & Zimmer-Gembeck, M. J. (2007). Peer status and behaviors of maltreated children and their classmates in the early years of school. *Child Abuse & Neglect*, 31(9), 971-991. doi: 10.1016/j.chiabu.2007.04.004
- Baron, R. M., & Kenny, D. A. (1986). The moderator – mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6), 1173-1182. doi: 10.1037/0022-3514.51.6.1173
- Benhorin, S., & McMahon, S. D. (2008). Exposure to violence and aggression: Protective roles of social support among urban African-American youth. *Journal of Community Psychology*, 36(6), 723-743. doi: 10.1002/jcop.20252

- Brady, S. S., Gorman-Smith, D., Henry, D. B., & Tolan, P. H. (2008). Adaptive coping reduces the impact of community violence exposure on violent behavior among African American and Latino male adolescents. *Journal of Abnormal Child Psychology*, 36(1), 105-115. doi: 10.1007/s10802-007-9164-x
- Brown, T. A. (2006). *Confirmatory factor analysis for applied research*. New York, NY.: The Guilford Press.
- Bridges, L. J. & Moore, K. A. (2002). *Religion and spirituality in childhood and adolescence*. Washington, D. C.: Child Trends.
- Blakeney, R. F., & Blakeney, C. D. (2006). Delinquency: A quest for moral and spiritual integrity? In E. C. Roehlkepartain, P. E. King, L. Wagener, & P. L. Benson (Eds.), *Handbook of spiritual development in childhood and adolescence* (pp. 371-383). Thousand Oaks, CA.: Sage Publications.
- Chen, W., Wang, L., Zhang, X., & Shi, J. (2012). Understanding the impact of trauma exposure on Posttraumatic Stress symptomatology: A structural equation modeling approach. *Journal of Loss and Trauma*, 17(1), 98-110. doi: 10.1080/15325024.2011.595293
- Christian, C. W., & Schwartz, D. F. (2011). Child maltreatment and the transition to adult-based medical and mental health care. *Pediatrics*, 127(1), 139-145. doi: 10.1542/peds.2010-2297.
- Clark, L. A., & Watson, D. (1991). Tripartite model of anxiety and depression: Psychometric evidence and taxonomic implications. *Journal of Abnormal Psychology*, 100(3), 316-36. doi: 10.1037/0021-843X.100.3.316
- Cole, D. A., & Maxwell, S. E. (2003). Testing meditational models with longitudinal

- data: Questions and tips in the use of Structural Equation Modeling. *Journal of Abnormal Psychology*, 112(4), 558-577. doi: 10.1037/0021-843X.112.4.558
- Collishaw, S., Pickles, A., Messer, J., Rutter, M., Shearer, C., & Maughan, B. (2007). Resilience to adult psychopathology following childhood maltreatment: Evidence from a community sample. *Child Abuse and Neglect*, 31(3), 211 – 229. doi: 10.1016/j.chiabu.2007.02.004
- Compas, B. E., Connor-Smith, J. K., Saltzman, H., Thornsen, A. H., & Wadsworth, M. E. (2001). Coping with stress during childhood and adolescence: Problems, progress, and potential in theory and research. *Psychological Bulletin*, 127(1), 87-127. doi: 10.1037/0033-2909.127.1.87
- Cotton, S., Zebracki, K., Rosenthal, S. L., Tsevat, J., & Drotar, D. (2006). Religion/spirituality and adolescent health outcomes: A review. *Journal of Adolescent Health*, 38(4), 427-480. doi: 10.1016/j.jadohealth.2005.10.005
- Courtney, M. E., Piliavin, I., Grogan-Kaylor, A., & Nesmith, A. (2001). Foster youth transitions to adulthood: A longitudinal view of youth leaving care. *Child Welfare: Journal of Policy, Practice, and Program*, 80(6), 685-717.
- Crawford, E., Wright, M. O., & Masten, A. S. (2006). Resilience and spirituality in youth. In E. C. Roehlkepartain, P. E. King, L. Wagener, & P. L. Benson (Eds.), *Handbook of spiritual development in childhood and adolescence* (pp. 355-370). Thousand Oaks, CA.: Sage Publications.
- Daining, C., & DePanfilis, D. (2007). Resilience of youth in transition from out-of-home care to adulthood. *Children and Youth Services Review*, 29(9), 1158-1178. doi: 10.1016/j.chilyouth.2007.04.006

- De Leeuw, E., Hox, J., & Kef, S. (2003). Computer-Assisted Self-Interviewing tailored for special populations and topics. *Field Methods*, 15(3), 223-251. doi: 10.1177/1525822X03254714
- Dew, R. E., Daniel, S. S., Goldston, D. B., McCall, W. V., Kuchibhatla, M., Schleifer, C., Triplett, M. F., & Koenig, H. G. (2010). A prospective study of religion/spirituality and depressive symptoms among adolescent psychiatric patients. *Journal of Affective Disorders*, 120(1-3), 149-157. doi: 10.1016/j.jad.2009.04.029
- Dodge, K. A., & Crick, N. R. (1990). Social information-processing bases of aggressive behavior in children. *Personality and Social Psychology Bulletin*, 16(1), 8-22. doi: 10.1177/0146167290161002
- Donnelly, T. M., Matsuba, K. M., Hart, D., & Atkins, R. (2006). The relationship between spiritual development and civic development. In E. C. Roehlkepartain, P. E. King, L. Wagener, & P. L. Benson (Eds.), *Handbook of spiritual development in childhood and adolescence* (pp. 239-251). Thousand Oaks, CA.: Sage Publications.
- Dowling, E. M., Getsdottir, S., Anderson, P. M., von Eye, A., Almerigi, J., & Lerner, R. M. (2004). Structural relations among spirituality, religiosity, and thriving in adolescence. *Applied Developmental Science*, 8(1), 7-16. doi: 10.1207/S1532480XADS0801\_2
- Elkind, D. (1971). The development of religious understanding in children and adolescents. In M. P. Strommen (Ed.), *Research in religious development* (pp. 655-685). New York: Hawthorn Books.

- Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007). G\*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, 39(2), 175-191. Retrieved from <http://proquest.umi.com.www2.lib.ku.edu:2048/pqdlink>
- Fernandez, E. (2008). Unravelling emotional, behavioural and educational outcomes in a longitudinal study of children in foster-care. *British Journal of Social Work*, 38(7), 1283-1301. doi: 10.1093/bjsw/bcm028
- Fernandez, E. (2009). Children's wellbeing in care: Evidence from a longitudinal study of outcomes. *Children and Youth Services Review*, 31(10), 1092-1100. doi: 10.1016/j.childyouth.2009.07.010
- Filipas, H. H., & Ullman, S. E. (2006). Child sexual abuse, coping responses, self-blame, Posttraumatic Stress Disorder, and adult sexual revictimization. *Journal of Interpersonal Violence*, 21(5), 652-672. doi: 10.1177/0886260506286879
- Fowler, J. W., & Dell, M. L. (2006). Stages of faith from infancy through adolescence: Reflections on three decades of faith development theory. In E. C. Roehlkepartain, P. E. King, L. Wagener, & P. L. Benson (Eds.), *Handbook of spiritual development in childhood and adolescence* (pp. 34-45). Thousand Oaks, CA.: Sage Publications.
- Gorusch, R. L., & Walker, D. (2006). Measurement and research design in studying spiritual development. In E. C. Roehlkepartain, P. E. King, L. Wagener, & P. L. Benson (Eds.), *Handbook of spiritual development in childhood and adolescence* (pp. 92-104). Thousand Oaks, CA.: Sage Publications.
- Grant, K.E., Compas, B. E., Thurm, A. E., McMahon, S. D., Gipson, P. Y., Campbell, A.

- J., Krochok, K., & Westerholm, R. I. (2006). Stressors and child and adolescent Psychopathology: Evidence of moderating and mediating effects. *Clinical Psychology Review*, 26(3), 257-283. doi: 10.1016/j.cpr.2005.06.011
- Granqvist, P., & Dickie, J. R. (2006). Attachment and spiritual development in childhood and adolescent. In E. C. Roehlkepartain, P. E. King, L. Wagener, & P. L. Benson (Eds.), *Handbook of spiritual development in childhood and adolescence* (pp. 197-210). Thousand Oaks, CA.: Sage Publications.
- Harter, S. (1985a). *Manual for the Social Support Scale for Children*. Denver, CO: University of Denver Press.
- Harter, S. (1985b). *The Self-Perception Profile for Children: Revision of the Perceived Competence Scale for Children*. Manual, University of Denver.
- Harvey, S. T., & Taylor, J. E. (2010). A meta-analysis of the effects of psychotherapy with sexually abused children and adolescents. *Clinical Psychology Review*, 30(5), 517-535. doi: 10.1016/j.cpr.2010.03.006
- Hayes, A. F., & Preacher, K. J. (2012). Indirect and direct effects of a multicategorical causal agent in statistical mediation analysis. (*Manuscript under review*).
- Hodge, D. R., Cardenas, P., & Montoya, H. (2001). Substance use: Spirituality and religious participation as protective factors among rural youth. *Social Work Research*, 25(3), 153-161. Retrieved from <http://web.ebscohost.com.www2.lib.ku.edu:2048>
- Jee, S., Szilagyi, M., Blatt, S., Meguid, V., Auinger, P., & Szilagyi, P. (2010). Timely identification of mental health problems in two foster care medical homes. *Children and Youth Services Review*, 32(5), 685-690. doi:

10.1016/j.childyouth.2010.01.004

Kaufman, A. S., & Kaufman, N. L. (2006). *Kaufman Brief Intelligence Test, Second Edition (K-BIT II)*. Bloomington, MN: Pearson Assessment.

Kelly, K. (2000). The education crisis for children in the California Juvenile Court System. *Hastings Constitutional Law Quarterly*, 27(3), 757-773.

Kim, J. (2008). The protective effects of religiosity on maladjustment among maltreated and nonmaltreated children. *Child Abuse & Neglect*, 32(7), 711-720. doi: 10.1016/j.chiabu.2007.09.011

Kim, J., McCullough, M. E., & Cicchetti, D. (2009). Parents' and children's religiosity and child behavioral adjustment among maltreated and nonmaltreated children. *Journal of Child and Family Studies*, 18(5), 594-605. doi: 10.1007/s10826-009-9262-1

King, P. E., & Benson, P. L. (2006). Spiritual development and adolescent well - being and thriving. In E. C. Roehlkepartain, P. E. King, L. Wagener, & P. L. Benson (Eds.), *Handbook of spiritual development in childhood and adolescence* (pp. 384-398). Thousand Oaks, CA.: Sage Publications.

King, P. E., & Furrow, J. L. (2004). Religion as a resource for positive youth development: Religion, social capital, and moral outcomes. *Developmental Psychology*, 40(5), 703-713. doi: 10.1037/0012-1649.40.5.703

Lazarus, R., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York: Springer.

Legault, L., Anawati, M., & Flynn, R. (2006). Factors favoring psychological resilience among fostered young people. *Children and Youth Services Review*, 28(9), 1024-1038. doi: 10.1016/j.childyouth.2005.10.006

Little, T. D. (2010, March). *Missing data estimation in longitudinal research: Why it is not cheating and why you should be doing it*. Workshop given at the annual meeting of the Society for Research on Adolescence, Philadelphia, PA.

Little, T. D., & Card, N. (2010, June). *Structural equation modeling: Foundations and extended applications*. Presented at the 8<sup>th</sup> Annual Summer Institutes on Advanced Quantitative Analyses, Sponsored through the University of Kansas Center for Research Methods & Data Analysis.

Little, T. D., Lopez, D. F., & Wanner, B. (2000). Children's action-control behaviors (coping): A longitudinal validation of the Behavioral Inventory of Strategic Control. *Anxiety, Stress, & Coping: An International Journal*, 14(3), 315-336.  
doi: 10.1080/10615800108248360

Lyons, J. S., Libman-Mintzer, L. N., Kisiel, C. L., & Shallcross, H. (1998). Understanding the mental health needs of children and adolescents in residential treatment. *Professional Psychology: Research and Practice*, 29(6), 582-587.  
doi: 10.1037/0735-7028.29.6.582

Mahoney, A., Pendleton, S., & Ihrke, H. (2006). Religious coping by children and adolescents: Unexplored territory in the realm of spiritual development. In E. C. Roehlkepartain, P. E. King, L. Wagener, & P. L. Benson (Eds.), *Handbook of spiritual development in childhood and adolescence* (pp. 341-354). Thousand Oaks, CA: Sage Publications.

Miles, J., & Shevlin, M. (2006). *Applying Regression & Correlation: A guide for students and researchers*. Thousand Oaks, CA: Sage Publications.

Miller, W. R., & Thoresen, C. E. (2003). Spirituality, religion, and health: An emerging



- research field. *American Psychologist*, 58(1), 24-35. doi: 10.1037/0003-066X.58.1.24
- Moos, R. H., & Moos, B. S. (1986). *Family Environment Scale manual* (2<sup>nd</sup> ed.). Palo Alto, CA: Consulting Psychologists Press.
- Oravecz, L. M., Osteen, P. J., Sharpe, T. L., & Randolph, S. M. (2011). Assessing low-income African-American pre-schoolers' behavior problems in relationship to community violence, inter-partner conflict, parenting, informal social support and social skills. *Child and Family Social Work*, 16(3), 310-324. doi: 10.1111/j.1365-2206.2010.00742.x
- Oswald, S. H., Heil, K., & Goldbeck, L. (2010). History of maltreatment and mental health problems in foster children: A review of the literature. *Journal of Pediatric Psychology*, 35(5), 462-472. doi: 10.1093/jpepsy/jsp114
- Owen, A. E., Thompson, M. P., Mitchell, M. D., Kennebrew, S. Y., Paranjape, A., Reddick, T., L., Hargrove, G. L., & Kaslow, N. J. (2008). Perceived social support as a mediator of the link between intimate partner conflict and child adjustment. *Journal of Family Violence*, 23(4), 221-230. doi: 10.1007/s10896-007-9145-4
- Pargament, K. I. (1997). *The psychology of religion and coping*. New York, NY: Guilford Press.
- Pargament, K. I., Tarakeshwar, N., Ellison, C. G., & Wulff, K. M. (2001). Religious coping among the religious; the relationships between religious coping and well-being in a national sample of Presbyterian clergy, elders, and members. *Journal of the Scientific Study of Religion*, 40(3), 497-514. doi: 10.1111/0021-8294.00073

- Perez, J. E., Little, T. D., & Henrich, C. C. (2009). Spirituality and depressive symptoms in a school-based sample of adolescents: A longitudinal examination of mediated and moderated effects. *Journal of Adolescent Health, 44*(4), 380-386.  
doi: 10.1016/j.jadohealth.2008.08.022
- Piedmont, R. L. (2004). Spiritual transcendence as a predictor of psychosocial outcome from an outpatient substance abuse program. *Psychology of Addictive Behaviors, 18*(3), 213-222. doi: 10.1037/0893-164X.18.3.213
- Pilowsky, D. J., & Wu, L. (2006). Psychiatric symptoms and substance use disorders in a nationally representative sample of American adolescents involved with foster care. *Journal of Adolescent Health, 38*(4), 351-358. doi: 10.1016/j.jadohealth.2005.06.014
- Plante, T. G., & Thoresen, C. E. (2007). *Spirit, science, and health: How the spiritual mind fuels physical wellness*. Westport, CT: Praeger Publishers/Greenwood Publishing Group.
- Preacher, K. J., & Hayes, A. F. (2008) Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods, 40*(3), 879 – 891. doi: 10.3758/BRM.40.3.879
- Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, & Computers, 36*(4), 717-731.
- Rey, J. M., Schrader, E., & Morris – Yates, A. (1992). Parent – child agreement on children’s behaviours reported by the Child Behavior Checklist (CBCL). *Journal of Adolescence, 15*(3), 219 – 230. doi: 10.1016/0140-1971(92)90026-2

- Reynolds, C. R., & Kamphaus, R. W. (2004). *Behavior Assessment System for Children – Second Edition*. Circle Pines, MN: AGS Publishing.
- Rew, L., Horner, S. D., Riesch, L., & Cauvin, R. (2004). Computer-Assisted Survey Interviewing of school-age children. *Advances in Nursing Science*, 27(2), 129-137. Retrieved from <http://ovidsp.tx.ovid.com.www2.lib.ku.edu:2048>
- Roehlkepartain, E. C., King, P. E., Wagener, L., & Benson, P. L. (Eds.). (2006). *Handbook of spiritual development in childhood and adolescence*. Thousand Oaks, CA: Sage Publications.
- Rogosch, F. A., Dackis, M. N., & Cicchetti, D. (2011). Child maltreatment and allostatic load: Consequences for physical and mental health in children from low-income families. *Development and Psychopathology*, 23(4), 1107-1124. doi: 10.1017/S0954579411000587
- Romer, D., Hornik, R., Stanton, B., Black, M., Li, X., Ricardo, I., & Feigelman, S. (1997). “Talking” computers: A reliable and private method to conduct interviews on sensitive topics with children. *Journal of Sex Research*, 34(1), 3-9. doi: 10.1080/00224499709551859
- Schwartz, K. D., Bukowski, W. M., & Aoki, W. T. (2006). Mentors, friends, and gurus: Peer and nonparent influences on spiritual development. In E. C. Roehlkepartain, P. E. King, L. Wagener, & P. L. Benson (Eds.), *Handbook of spiritual development in childhood and adolescence* (pp. 310-323). Thousand Oaks, CA: Sage Publications.
- Selig, J. P., & Preacher, K. J. (2009). Mediation models for longitudinal data in developmental research. *Research in Human Development*, 6(2-3), 144-164.

- doi: 10.1080/15427600902911247
- Sexson, S. B. (2004). Religious and spiritual assessment of the child and adolescent. *Child and Adolescent Psychiatric Clinics of North America*, 13(1), 35-47.  
doi: 10.1016/S1056-4993(03)00075-0
- Sifers, S. K., Warren, J. S., & Jackson, Y. K. (2012). *Measuring spirituality in children*. Unpublished manuscript, Clinical Child Psychology Program, University of Kansas, Lawrence, Kansas.
- Smith, C. (2003). Religious participation and network closure among American adolescents. *Journal for the Scientific Study of Religion*, 42(2), 259-267.  
doi: 10.1111/1468-5906.00177
- Smith, C. (2003). Theorizing religious effects among American adolescents. *Journal for the Scientific Study of Religion*, 42(1), 17-30.  
doi: 10.1111/1468-5906.t01-1-00158
- Sobel, M.E. (1982). Asymptotic confidence intervals for indirect effects in structural equation models. In S. Leinhardt (Ed.), *Sociological methodology 1982* (pp. 290-312). San Francisco: Jossey-Bass.
- Spielberger, C. (1972). *STAIC: The State-Trait Anxiety Inventory for Children*. Palo Alto, CA: Consulting Psychologists Press.
- Stone, S. (2007). Child maltreatment, out-of-home placement and academic vulnerability: A fifteen-year review of evidence and future directions. *Children and Youth Services Review*, 29(2), 139-161. doi: 10.1016/j.childyouth.2006.05.001
- Stronach, E. P., Toth, S. L., Rogosch, F., Oshri, A., Manly, J. T., & Cicchetti, D. (2011). Child maltreatment, attachment security, and internal representations of mother

- and mother-child relationships. *Child Maltreatment*, 16(2), 137-145. doi: 10.1177/1077559511398294
- Tarren-Sweeney, M. (2008). The mental health of children in out-of-home care. *Current Opinion in Psychiatry*, 21(4), 345-349. doi: 10.1097/YCO.0b013e32830321fa
- Teisl, M., Rogosch, F. A., Ohsri, A., & Cicchetti, D. (2012). Differential expression of social dominance as a function of age and maltreatment experience. *Developmental Psychology*, 48(2), 575-588. doi: 10.1037/a0024888
- Tomalski, P., & Johnson, M. H. (2010). The effects of early adversity on the adult and developing brain. *Current Opinion in Psychiatry*, 23(3), 233-238. doi: 10.1097/YCO.0b013e3283387a8c
- United States Department of Justice: Office of Juvenile Justice and Delinquency Prevention. (2009). *Juvenile Justice Bulletin: Juvenile Arrests 2008*. [Online]. Retrieved on September 05, 2010 from: <http://www.ncjrs.gov/pdffiles1/ojjdp/228479.pdf>
- Van Dyke, C. J., Glenwick, D. S., Cecero, J. J., & Kim, S. (2009). The relationship of religious coping and spirituality to adjustment and psychological distress in urban early adolescents. *Mental Health, Religion, and Culture*, 12(4), 369-383. doi: 10.1080/13674670902737723
- Vanlede, M., Little, T. D., & Card, N. A. (2006). Action-control beliefs and behaviors as predictors of change in adjustment across the transition to middle school. *Journal of Anxiety, Stress, and Coping*, 19(2), 111-127. doi: 10.1080/10615800600632896
- Walker, D. F., Reese, J. B., Hughes, J. P., & Troskie, M. J. (2010). Addressing religious

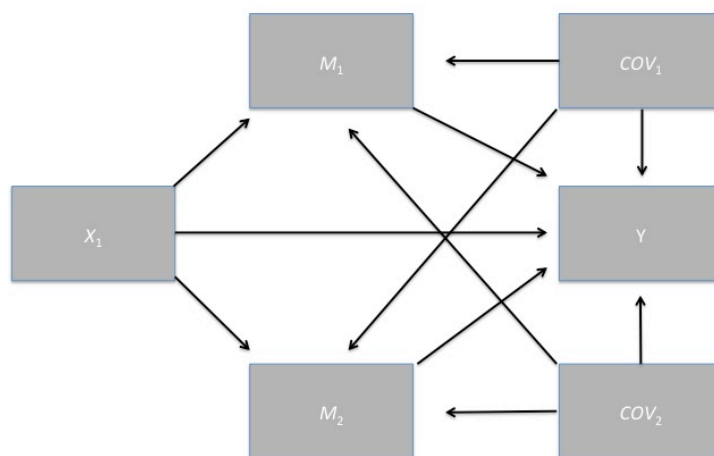
- and spiritual issues in Trauma-Focused Cognitive Behavior Therapy for children and adolescents. *Professional Psychology: Research and Practice*, 41(2), 174-180. doi: 10.1037/a0017782
- Walsh, R. (2000). *Essential spirituality*. New York: Wiley.
- Warner, H. L., Mahoney, A., & Krumrei, E. J. (2009). When parents break sacred vows: The role of spiritual appraisals, coping, and struggles in young adults' adjustment to parental divorce. *Psychology of Religion and Spirituality*, 1(4), 233-248. doi: 10.1037/a0016787.
- Zetlin, A. G., & Weinberg, L. A. (2004) Understanding the plight of foster youth and improving their educational opportunities. *Child Abuse & Neglect*, 28(9), 917-923. doi: 10.1016/j.chiabu.2004.03.010
- Zetlin, A. G., Weinberg, L. A., & Luderer, J. (2004). Problems and solutions to improving education services for children in foster care. *Preventing School Failure*, 45(1), 1-7.
- Zielinski, D. S., & Bradshaw, C. P. (2006). Ecological influences on the sequelae of child maltreatment: A review of the literature. *Child Maltreatment*, 11(1), 49-62, doi: 10.1177/1077559505283591
- Zinnbauer, B. J., Pargament, K. I., Cole, B., Rye, M. S., Butter, E. M., Belavich, T. G., Hipp, K. M., Scott, A. B., & Kadar, J. L. (1997). Religion and spirituality: Unfuzzifying the fuzzy. *Journal for the Scientific Study of Religion*, 36(4), 549-564. doi: 10.2307/1387689

## APPENDIX A

### Preliminary Indirect Effect Analyses: Single Predictor Models with Multiple Mediators.

A total of 12 indirect effect analyses were conducted utilizing Preacher and Hayes' *Indirect* macro for calculating indirect effects with bootstrap resampling. This macro was designed for SPSS V. 20, and allows for the inclusion of a single predictor ( $X$ ) variable, multiple intervening variables ( $M$ s), and a single outcome variable ( $Y$ ). For each analysis, a total of 5000 bootstrap samples were created, and 95% Confidence Intervals were generated for indirect effect estimates. Child residential status and age were included within each of these models as covariates, as mean differences were observed for certain study variables as a function of these factors. A figure of the overall model tested for each of these analyses is provided in Figure A1. Variables included in each separate analysis, as well as associated hypotheses, are listed in Table A1.

*Figure A1. Proposed Model for Tests of Indirect Effects Using Single Predictor ( $X$ ), Multiple Intervening Variables ( $M$ s), and Single Outcome Variable ( $Y$ )*



*Table A1. Preliminary Analyses: Proposed Tests of Indirect Effects for Study Variables, Utilizing Single Predictor (X) and INDIRECT Macro*

Study Hypothesis Addressed	Predictor Variable (X)	Proposed Intervening Variables (Ms)	Criterion Variable (Y)
c1	SPIRIT	BISC, SSSC	BASC ADAPT CR
c2	SPIRIT	BISC, SSSC	BASC INT CR
c3	SPIRIT	BISC, SSSC	BASC INN/HYP CR
c4	SPIRIT	BISC, SSSC	BASC ADAPT AR
c5	SPIRIT	BISC, SSSC	BASC INT AR
c6	SPIRIT	BISC, SSSC	BASC EXT AR
d1	RO	BISC, SSSC	BASC ADAPT CR
d2	RO	BISC, SSSC	BASC INT CR
d3	RO	BISC, SSSC	BASC INN/HYP CR
d4	RO	BISC, SSSC	BASC ADAPT AR
d5	RO	BISC, SSSC	BASC INT AR
d6	RO	BISC, SSSC	BASC EXT AR

SPIRIT = Data-Derived Spirituality Scale (Factor 1), Child Report; RO = Data-Derived Relationship with Others Scale (Factor 2), Child Report; BISC = Behavioral Inventory of Strategic Control, Direct Action Subscale; SSSC = Social Support Scale for Children; BASC INT CR = Behavioral Assessment System for Children, Second Edition, Internalizing Composite Score, Child Report; BASC INN/HYP CR = Behavioral Assessment System for Children, Second Edition, Inattention/Hyperactivity Composite Score, Child Report; BASC PA CR = Behavioral Assessment System for Children, Second Edition, Personal Adjustment Composite Score, Child Report; BASC INT AR = Behavioral Assessment System for Children, Second Edition, Internalizing Composite Score, Adult Report; BASC EXT AR = Behavioral Assessment System for Children, Second Edition, Externalizing Composite Score, Adult Report; BASC ADAPT AR = Behavioral Assessment System for Children, Second Edition, Adaptive Composite Score, Adult Report.

The *c hypotheses* (models 1-3) included tests of Spirituality as the predictor, Social Support and Coping as potential indirect predictors and each of the youth - report outcome variables (Personal Adjustment, Internalizing, and Inattention/Hyperactivity) in separate analyses. These analyses were repeated in Phase 2 (models c4 - c6) and adult



report of the three outcome variables was included as the outcome variable of interest (also in separate analyses; Adaptive, Internalizing, Externalizing). These analyses were repeated for *d hypotheses* (1-6), including RO scores as the predictor variable.

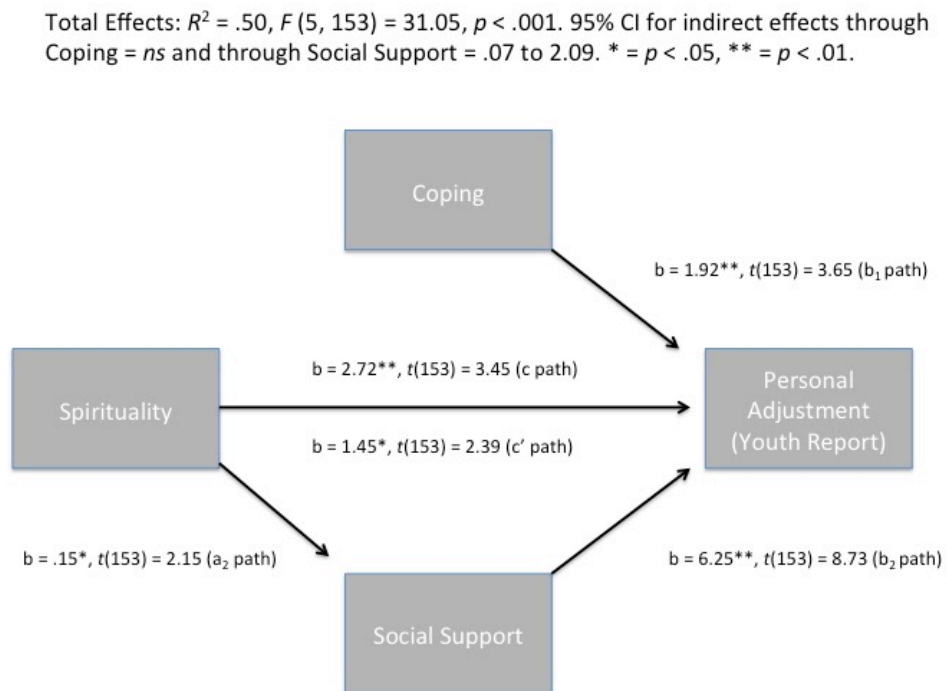
**C Hypotheses: Spirituality Scores as a Single Predictor Variable (c1 through c3: Youth - Reported Outcomes, and c4 through c6: Adult - Reported Outcomes)**

**C1 - BASC Personal Adjustment (Youth Report) as the Outcome Variable.**

Hypothesis c1 predicted that BISC Scores (Coping) and SSSC scores (Social Support) would have significant indirect effects on the relation between Spirituality scales scores and child reported BASC Personal Adjustment scores. The inclusion of these variables accounted for approximately 50% of the variance in BASC Personal Adjustment scores ( $R^2 = .50$ ,  $F [5, 153] = 31.05$ ,  $p < .001$ ). A significant direct effect was found for the relation between Spirituality and BASC Personal Adjustment scores ( $b = 1.45$ ,  $t[153] = 2.39$ ,  $p < .01$ ;  $c'$  pathway). Although the direct relation between Spirituality and BISC scores ( $a_1$  pathway) emerged as nonsignificant, a significant direct effect was found for the relation between Spirituality and SSSC scores ( $b = .15$ ,  $t[153] = 2.15$ ,  $p < .05$ ;  $a_2$  pathway). Significant direct effects were also found for the relation between BISC scores and BASC Personal Adjustment scores ( $b = 1.92$ ,  $t[153] = 3.65$ ,  $p < .01$ ;  $b_1$  pathway), as well as for the relation between SSSC scores and BASC Personal Adjustment scores ( $b = 6.25$ ,  $t[153] = 8.73$ ,  $p < .01$ ;  $b_2$  pathway). Tests of indirect effects for  $a_1b_1$  emerged as nonsignificant, indicating an absence of indirect effects for BISC scores on the relation between Spirituality scores and BASC Personal Adjustment. A significant indirect effect was found for  $a_2b_2$ , indicating that SSSC scores significantly affected the relation between Spirituality scores and BASC Personal Adjustment scores (the 95% CI, .07 to

2.09 [ $SE = .52$ ], did not contain zero). Overall, the total effect of Spirituality and mediators on BASC Personal Adjustment scores emerged as significant ( $b = 2.72$ ,  $t[153] = 3.45$ ,  $p < .01$ );  $c$  pathway =  $c' + a_1b_1 + a_2b_2$  pathways). Hypothesis c1 was only partially supported, in that only SSSC scores evidenced significant indirect effects on the relation between Spirituality scores and child reported BASC Personal Adjustment scores. Results are depicted in Figure A2.

*Figure A2. Tests of Indirect Effects of the BISC ( $M_1$ ) and SSSC ( $M_2$ ) on the Relation Between Spirituality ( $X$ ) and BASC Youth Reported Personal Adjustment Scores ( $Y$ ).*

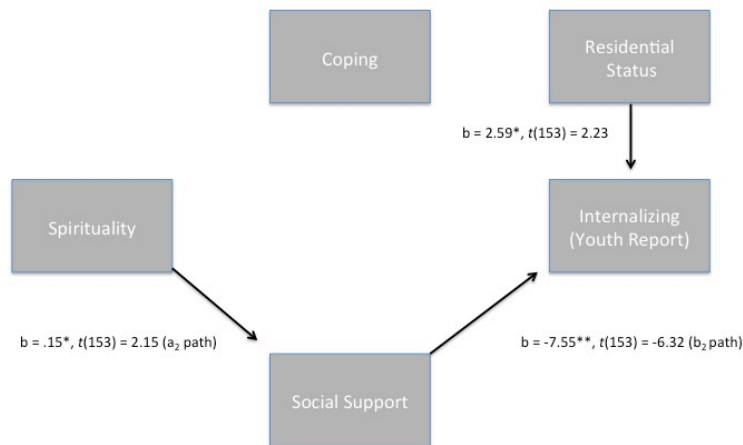


**C2 – BASC Internalizing Problem Scores (Youth Report) as the Outcome Variable.** The previous analysis was repeated with BASC Internalizing scores as the outcome variable. The inclusion of all variables accounted for approximately 31% of the

variance in BASC Internalizing scores ( $R^2 = .31$ ,  $F [5, 153] = 13.76$ ,  $p < .001$ ). Participant residential status emerged as a significant covariate within the overall model ( $b = 2.59$ ,  $t[153] = 2.23$ ,  $p < .05$ ). No significant direct effect was found for the relation between Spirituality and BASC Internalizing scores ( $c'$  pathway). A significant direct effect was found for the relation between Spirituality and SSSC scores ( $b = .15$ ,  $t[153] = 2.15$ ,  $p < .05$ ;  $a_2$  pathway). No significant direct effect was found for the relation between BISC scores and BASC Internalizing scores, but the relation between SSSC scores and BASC Internalizing scores was significant ( $b = -7.55$ ,  $t[153] = -6.32$ ,  $p < .01$ ;  $b_2$  pathway). Although tests of indirect effects for  $a_1b_1$  emerged as nonsignificant, a significant indirect effect was found for  $a_2b_2$ . SSSC scores significantly affected the relation between Spirituality scores and BASC Internalizing scores (the 95% CI, -2.74 to -.10 [ $SE = .67$ ], did not contain zero). Overall, the total effects emerged as nonsignificant ( $c$  pathway). Hypothesis c2 was only partially supported, in that significant indirect effects were found only for SSSC scores. Results are depicted in Figure A3.

*Figure A3. Tests of Indirect Effects of the BISC ( $M_1$ ) and SSSC ( $M_2$ ) on the Relation Between Spirituality ( $X$ ) and BASC Youth Reported Internalizing Scores ( $Y$ ).*

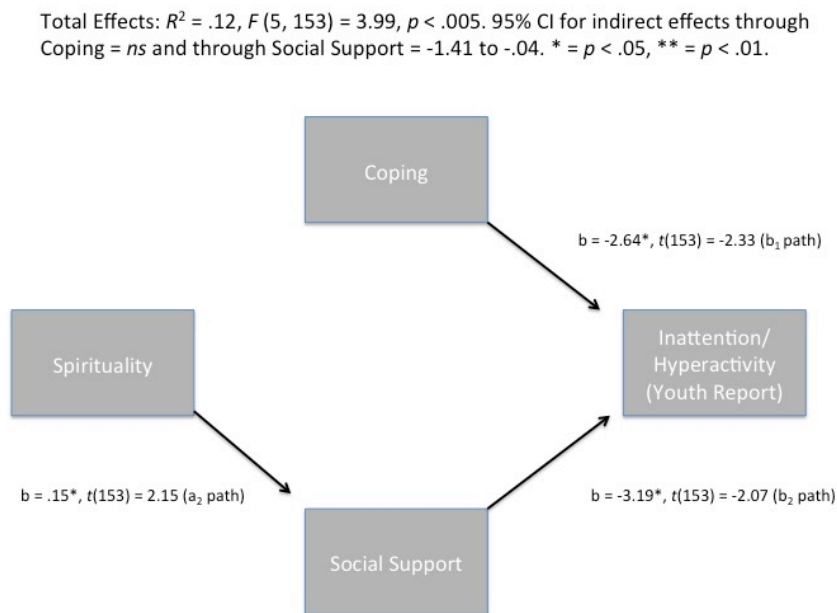
Total Effects:  $R^2 = .31$ ,  $F(5, 153) = 13.76$ ,  $p < .001$ . 95% CI for indirect effects through Coping = *ns* and through Social Support = -2.74 to -.10. \* =  $p < .05$ , \*\* =  $p < .01$ .



**C3 – BASC Inattention/Hyperactivity Scores (Youth Report) as the Outcome Variable.** The previous analysis was repeated with BASC Inattention/Hyperactivity problem scores as the outcome variable. The inclusion of all variables accounted for approximately 12% of the variance in BASC Inattention/Hyperactivity scores ( $R^2 = .12$ ,  $F[5, 153] = 3.99$ ,  $p < .005$ ). No significant direct effect was found for the relation between Spirituality and BASC Inattention/Hyperactivity scores ( $c'$  pathway). A significant direct effect was found for the relation between Spirituality and SSSC scores ( $b = .15$ ,  $t[153] = 2.15$ ,  $p < .05$ ;  $a_2$  pathway). Significant direct effects were found for the relation between BISC scores and BASC Inattention/Hyperactivity scores ( $b = -2.64$ ,  $t[153] = -2.33$ ,  $p < .05$ ;  $b_1$  pathway), as well as for the relation between SSSC scores and BASC Inattention/Hyperactivity scores ( $b = -3.19$ ,  $t[153] = -2.33$ ,  $p < .05$ ;  $b_2$  pathway). Although tests of indirect effects for  $a_1b_1$  emerged as nonsignificant, a significant indirect effect was found for  $a_2b_2$  (the 95% CI, -1.41 to -.04

[ $SE = .32$ ], did not contain zero). Overall, the total effect emerged as nonsignificant (c pathway). Hypothesis c3 was only partially supported, in that significant indirect effects were found for only the SSSC. Results are depicted in Figure A4.

*Figure A4. Tests of Indirect Effects of the BISC ( $M_1$ ) and SSSC ( $M_2$ ) on the Relation Between Spirituality ( $X$ ) and BASC Youth Reported Inattention/Hyperactivity Scores ( $Y$ ).*



**C4 – BASC Adaptive Scores (Adult Report) as the Outcome Variable.** The previous analysis was repeated with adult reported BASC Adaptive scores as the outcome variable. Participant residential status (foster care vs. residential center) and participant age (child vs. adolescent) were included as covariates within the overall model. The inclusion of these variables accounted for approximately 8% of the variance in BASC Adaptive scores ( $R^2 = .08$ ,  $F[5, 153] = 2.76$ ,  $p < .05$ ). Participant residential status emerged as a significant covariate within the overall model ( $b = -2.21$ ,  $t[153] = -2.29$ ,  $p < .05$ ). No significant direct effect was found for the relation between Spirituality and BASC Adaptive scores (c' pathway). A significant direct effect was found for the relation

between Spirituality and SSSC scores ( $b = .15$ ,  $t[153] = 2.15$ ,  $p < .05$ ;  $a_2$  pathway). Significant direct effects were found for the relation between BISC scores and BASC Adaptive scores ( $b = 1.74$ ,  $t[153] = 2.38$ ,  $p < .05$ ;  $b_1$  pathway); however, no significant direct effect was found for the relation between SSSC scores and BASC Adaptive scores ( $b_2$  pathway). Tests of indirect effects for  $a_1b_1$  and  $a_2b_2$  also emerged as nonsignificant. Hypothesis c4 was not supported.

#### **C5 – BASC Internalizing Problem Scores (Adult Report) as the Outcome**

**Variable.** The previous analysis was repeated with BASC Internalizing scores as the outcome variable. The inclusion of all variables accounted for approximately 8% of the variance in BASC Internalizing scores ( $R^2 = .08$ ,  $F[5, 153] = 2.67$ ,  $p < .05$ ). No significant direct effect was found for the relation between Spirituality and BASC Internalizing scores ( $c'$  pathway). A significant direct effect was found for the relation between Spirituality and SSSC scores ( $b = .15$ ,  $t[153] = 2.15$ ,  $p < .05$ ;  $a_2$  pathway). Significant direct effects were found for the relation between BISC scores and BASC Internalizing scores ( $b = -3.87$ ,  $t[153] = -2.71$ ,  $p < .01$ ;  $b_1$  pathway); however, no significant direct effect was found for the relation between SSSC scores and BASC Internalizing scores ( $b_2$  pathway). Tests of indirect effects for  $a_1b_1$  and  $a_2b_2$  also emerged as nonsignificant. Hypothesis c5 was not supported.

#### **C6 – BASC Externalizing Problem scores (Adult Report) as the Outcome**

**Variable.** The previous analysis was repeated with BASC Externalizing scores as the outcome variable. The inclusion of all variables accounted for approximately 7% of the variance in BASC Externalizing scores ( $R^2 = .07$ ,  $F[5, 153] = 2.49$ ,  $p < .05$ ). No significant direct effect was found for the relation between Spirituality and BASC

Externalizing scores ( $c'$  pathway). A significant direct effect was found for the relation between Spirituality and SSSC scores ( $b = .15$ ,  $t[153] = 2.15$ ,  $p < .05$ ;  $a_2$  pathway). No significant direct effects were found for the relation between BISC scores and BASC Externalizing scores ( $b_1$  pathway), or for the relation between SSSC scores and BASC Externalizing scores ( $b_2$  pathway). Tests of indirect effects for  $a_1b_1$  and  $a_2b_2$  also emerged as nonsignificant. Hypothesis  $c_6$  was not supported.

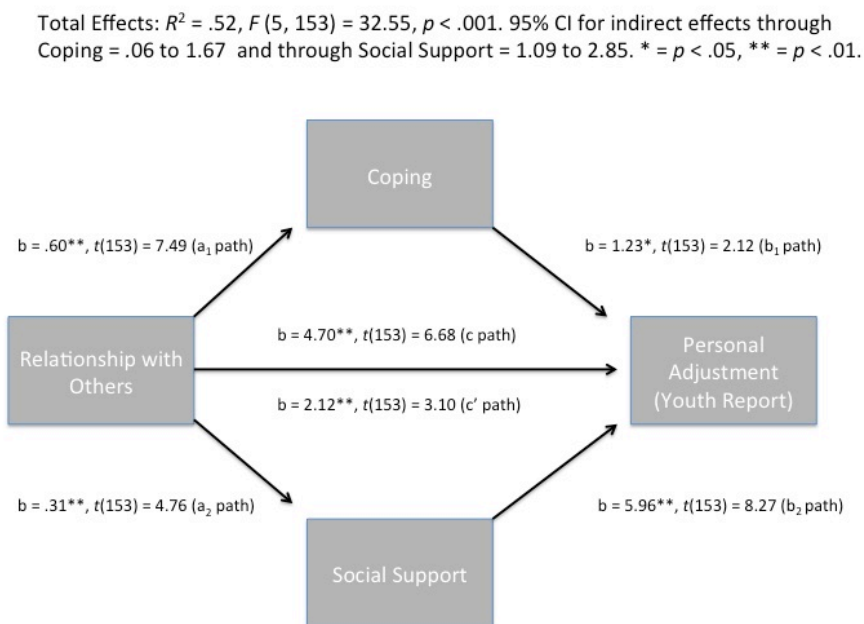
**D Hypotheses: Relationship with Others (RO) Scores as a Single Predictor Variable (D1 through D3: Youth - Reported Outcomes, and D4 through D6: Adult - Reported Outcomes)**

**D1 - BASC Personal Adjustment (Youth Report) as the Outcome Variable.**

Hypothesis d1 predicted that BISC Scores (Coping) and SSSC scores (Social Support) would have significant indirect effects on the relation between Relationship with Others (RO) scale scores and youth reported BASC Personal Adjustment scores. The inclusion of these variables accounted for approximately 52% of the variance in BASC Personal Adjustment scores ( $R^2 = .52$ ,  $F[5, 153] = 32.55$ ,  $p < .001$ ). A significant direct effect was found for the relation between RO scores and BASC Personal Adjustment scores ( $b = 2.12$ ,  $t[153] = 3.10$ ,  $p < .01$ ;  $c'$  pathway). Significant direct effects were found for the relation between RO scores and BISC scores ( $b = .60$ ,  $t[153] = 7.49$ ,  $p < .01$ ;  $a_1$  pathway) and also for the relation between RO scores and SSSC scores ( $b = .31$ ,  $t[153] = 4.76$ ,  $p < .01$ ;  $a_2$  pathway). Significant direct effects were also found for the relation between BISC scores and BASC Personal Adjustment scores ( $b = 1.23$ ,  $t[153] = 2.12$ ,  $p < .05$ ;  $b_1$  pathway), as well as for the relation between SSSC scores and BASC Personal Adjustment scores ( $b = 5.96$ ,  $t[153] = 8.27$ ,  $p < .01$ ;  $b_2$  pathway). Tests of indirect effects

for  $a_1b_1$  emerged as significant (the 95% CI, .06 to 1.67 [ $SE = .40$ ], did not contain zero) indicating the presence of an indirect effect for BISC scores on the relation between RO scores and BASC Personal Adjustment. A significant indirect effect was also found for  $a_2b_2$ , indicating that SSSC scores significantly affected the relation between RO scores and BASC Personal Adjustment scores (the 95% CI, 1.09 to 2.85 [ $SE = .44$ ], did not contain zero). Overall, the total effect of RO scores and indirect effects on BASC Personal Adjustment scores emerged as significant ( $b = 4.70$ ,  $t[153] = 6.68$ ,  $p < .01$ ;  $c$  pathway =  $c' + a_1b_1 + a_2b_2$  pathways). Hypothesis d1 was fully supported, in that both BISC and SSSC scores evidenced significant indirect effects on the relation between RO scores and child reported BASC Personal Adjustment scores. Results are depicted in Figure A5.

*Figure A5. Tests of Indirect Effects of the BISC ( $M_1$ ) and SSSC ( $M_2$ ) on the Relation Between Relationship with Others ( $X$ ) and BASC Youth Reported Personal Adjustment Scores ( $Y$ ).*

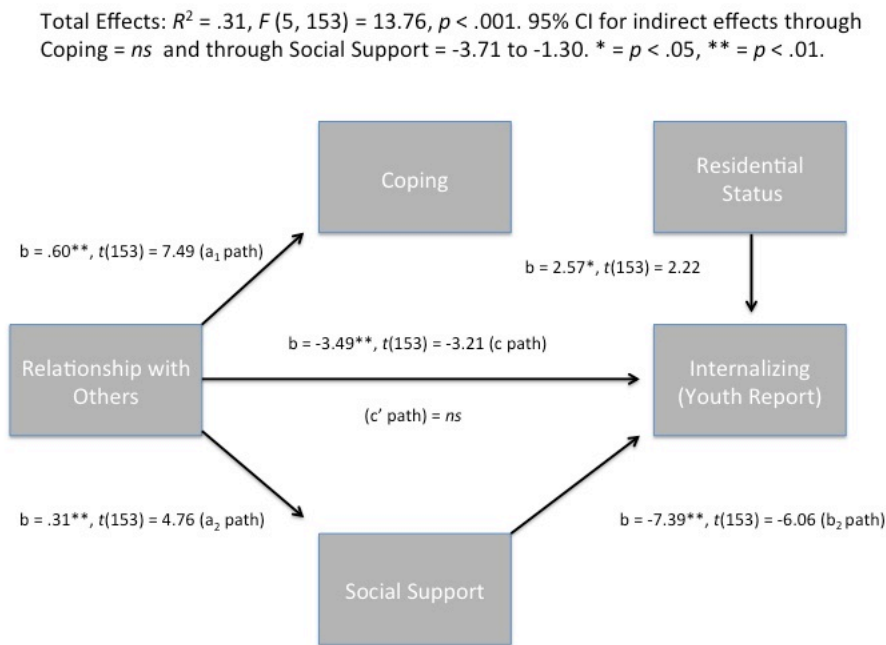




## **D2 - BASC Internalizing Problem Scores (Youth Report) as the Outcome**

**Variable.** The previous analysis was repeated with youth - reported BASC Internalizing scores as the outcome variable. The included variables accounted for approximately 31% of the variance in BASC Internalizing scores ( $R^2 = .31$ ,  $F [5, 153] = 13.76$ ,  $p < .001$ ). Participant residential status emerged as a significant covariate within the overall model ( $b = 2.57$ ,  $t[153] = 2.22$ ,  $p < .05$ ). No significant direct effect was found for the relation between RO scores and BASC Internalizing scores (c' pathway). As previously mentioned and as will be omitted in subsequent reporting, significant direct effects were found for the relation between RO scores and BISC scores ( $b = .60$ ,  $t[153] = 7.49$ ,  $p < .01$ ;  $a_1$  pathway) and also for the relation between RO scores and SSSC scores ( $b = .31$ ,  $t[153] = 4.76$ ,  $p < .01$ ;  $a_2$  pathway). A significant direct effect was found for the relation between SSSC scores and BASC Internalizing scores ( $b = -7.39$ ,  $t[153] = -6.06$ ,  $p < .01$ ;  $b_2$  pathway). Although tests of indirect effects for  $a_1b_1$  emerged as nonsignificant, a significant indirect effect was found for  $a_2b_2$  (the 95% CI, -3.71 to -1.30 [ $SE = .60$ ], did not contain zero). Overall, total effects on BASC Internalizing scores emerged as significant ( $b = -3.49$ ,  $t[153] = -3.21$ ,  $p < .01$ ; c pathway). Hypothesis d2 was only partially supported, in that significant indirect effects were found only for the SSSC. Results are depicted in Figure A6.

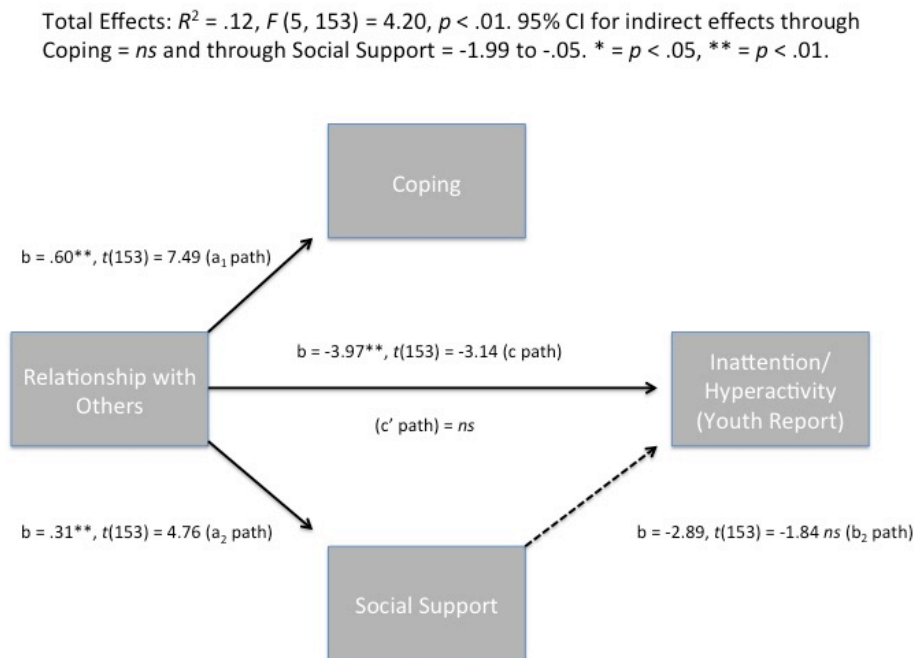
*Figure A6. Tests of Indirect Effects of the BISC ( $M_1$ ) and SSSC ( $M_2$ ) on the Relation Between Relationship with Others ( $X$ ) and BASC Youth Reported Internalizing Scores ( $Y$ ).*



**D3 - BASC Inattention/Hyperactivity Scores (Youth Report) as the Outcome Variable.** The previous analysis was repeated with youth - reported BASC Inattention/Hyperactivity scores. The included variables accounted for approximately 12% of the variance in BASC Inattention/Hyperactivity scores ( $R^2 = .12$ ,  $F[5, 153] = 4.20$ ,  $p < .01$ ). No significant direct effect was found for the relation between RO scores and BASC Inattention/Hyperactivity scores ( $c'$  pathway). No significant direct effects were found for the relation between BISC scores and BASC Inattention/Hyperactivity scores ( $b_1$  pathway), or for the relation between SSSC scores and BASC Inattention/Hyperactivity scores ( $b_2$  pathway). Although tests of indirect effects for  $a_1b_1$

emerged as nonsignificant, a significant indirect effect was found for  $a_2b_2$  (the 95% CI, -1.99 to -.05 [ $SE = .48$ ], did not contain zero). Overall, the total effect of RO scores on BASC Inattention/Hyperactivity scores emerged as significant ( $b = -3.97$ ,  $t[153] = -3.14$ ,  $p < .01$ ; c pathway). Although a significant total effect was present, hypothesis d3 was not supported due to nonsignificant indirect effects. Results are depicted in Figure A7.

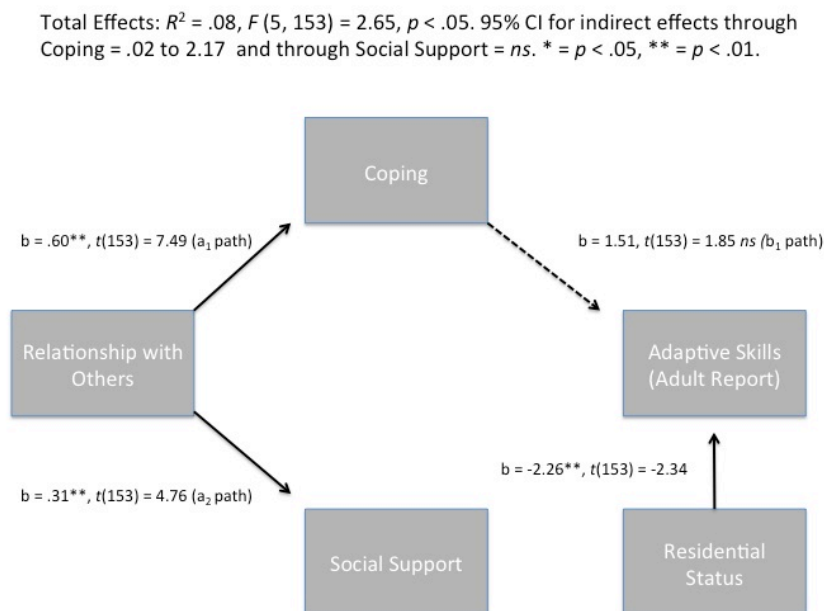
*Figure A7. Tests of Indirect Effects of the BISC ( $M_1$ ) and SSSC ( $M_2$ ) on the Relation Between Relationship with Others ( $X$ ) and BASC Youth Reported Inattention/Hyperactivity Scores ( $Y$ ).*



**D4 - BASC Adaptive Scores (Adult Report) as the Outcome Variable.** The previous analysis was repeated with adult reported BASC Adaptive scores as the outcome variable. The included variables accounted for approximately 8% of the variance in BASC Adaptive scores ( $R^2 = .08$ ,  $F[5, 153] = 2.65$ ,  $p < .05$ ). Participant residential status emerged as a significant covariate within the overall model ( $b = -2.26$ ,  $t[153] = -2.34$ ,  $p <$

.01). No significant direct effect was found for the relation between RO scores and BASC Adaptive scores (c' pathway). No significant direct effects were found for the relation between BISC scores and BASC Adaptive scores ( $b_1$  pathway), or for the relation between SSSC scores and BASC Adaptive scores ( $b_2$  pathway). Tests of indirect effects for  $a_1b_1$  emerged as significant (the 95% confidence interval, .02 to 2.17 [ $SE = .54$ ], did not contain zero), indicating the presence of an indirect effect for BISC scores on the relation between RO scores and BASC Adaptive scores. No significant indirect effect was found for  $a_2b_2$ . Overall, the total effect of RO scores on BASC Adaptive scores emerged as nonsignificant (c pathway). Hypothesis d4 was only partially supported, in that significant indirect effects were found only for the BISC. Results are depicted in Figure A8.

*Figure A8. Tests of Indirect Effects of the BISC ( $M_1$ ) and SSSC ( $M_2$ ) on the Relation Between Relationship with Others (X) and BASC Adult Reported Adaptive Skill Scores (Y).*



### **D5 - BASC Internalizing Problem Scores (Adult Report) as the Outcome**

**Variable.** The previous analysis was repeated with adult reported BASC Internalizing scores as the outcome. The included variables accounted for approximately 9% of the variance in BASC Internalizing scores ( $R^2 = .09$ ,  $F [5, 153] = 3.16$ ,  $p < .01$ ). No significant direct effect was found for the relation between RO scores and BASC Internalizing scores ( $c'$  pathway). No significant direct effects were found for the relation between BISC scores and BASC Internalizing scores ( $b_1$  pathway), or for the relation between SSSC scores and BASC Internalizing scores ( $b_2$  pathway). Tests of indirect effects for  $a_1b_1$  and for  $a_2b_2$  also emerged as nonsignificant. Although significant total effects were found ( $b = -3.88$ ,  $t[153] = -2.47$ ,  $p < .05$ ;  $c$  pathway), hypothesis d5 was not supported due to an absence of significant indirect effects.

### **D6 - BASC Externalizing Scores (Adult Report) as the Outcome Variable.**

The previous analysis was repeated with adult reported BASC Externalizing scores as the outcome variable. The included variables accounted for approximately 7% of the variance in BASC Externalizing scores ( $R^2 = .07$ ,  $F [5, 153] = 2.44$ ,  $p < .05$ ). No significant direct effect was found for the relation between RO scores and BASC Externalizing scores ( $c'$  pathway). No significant direct effects were found for the relation between BISC scores and BASC Externalizing scores ( $b_1$  pathway), or for the relation between SSSC scores and BASC Externalizing scores ( $b_2$  pathway). Tests of indirect effects for  $a_1b_1$  and  $a_2b_2$  emerged as nonsignificant, and hypothesis d6 was not supported.